SERVICE MANUAL

(without price)

ELECTRONIC CASH REGISTER

TK-800 (EX-547)

JANUARY 1997

Printer Model : MD-910

CASIO®

MC-Service

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1. SPECIFICATIONS

Power consumption

		120 V	220 V	230 V	240 V
In operation	Max.	0.28 A	0.17 A	0.16 A	0.15 A
	Stand by	0.14 A	0.09 A	0.08 A	0.07 A
Mode SW OFF	Max.	0.12 A	0.08 A	0.07 A	0.06 A

Memory protection

Backup battery	Vanadium Lithium secondary battery VL3032/1F2
Backup period	90 days (25 °C)
Battery life	5 years (25 °C)
Recharge time	48 hours

Memory capacity

SFD 32 KB CXK58257AP-70/10L
Max 128 KB (with option: RAM 530)

Clock and calender

Accuracy	Within ±30 sec. per month (25 °C)
Auto calender	Effective until 2099 A.D.

Environment

Operating temperature	0 °C ~ 40 °C
Operating humidity	10 % ~ 90 %
Storage temperature	-25 °C ~ 65 °C
Storage humidity	10 % ~ 95 %

Printer

Model	MD-910-SSC
Print method	Dot matrix printing
Print digits	24 digits
MCBF	1,500,000 lines

Ink cassette

Life 250,000 characters

Roll paper

Type	Fine-quality paper or Pressure-sensitive copy paper
Size	57.5 ±0.5 mm
Roll diameter	83 mm or less

CAUTION
Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacture's instructions.

VORSICHT !
Explosionsgefahr bei unsachgemäßem Austausch der Batterie. Ersatz nur durch denselben oder einen vom Hersteller empfohlenen gleichwertigen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

ADVARSEL !
Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandØren.

2. INITIALIZE (MAC) OPERATION

INIT A: All memory clear

1. Set the mode switch to “OFF” position.
2. Pressing the “FEED” button and turn the mode switch to “PRG” position.
3. Release the “FEED” button.
4. Input the MAC CODE D1 (1 digit).
5. Press “#2” key.
6. Initialize operation is executed.

MAC CODE D1: 0: Detailed check tracking
2: Total check tracking

INIT B: Load the program from EEPROM

1. Set the mode switch to “OFF” position.
2. Pressing the “FEED” button and turn the mode switch to “PRG” position.
3. Release the “FEED” button.
4. Input t “0” “0” by numeral key.
5. Press “#2” key.
6. Initialize operation is executed.

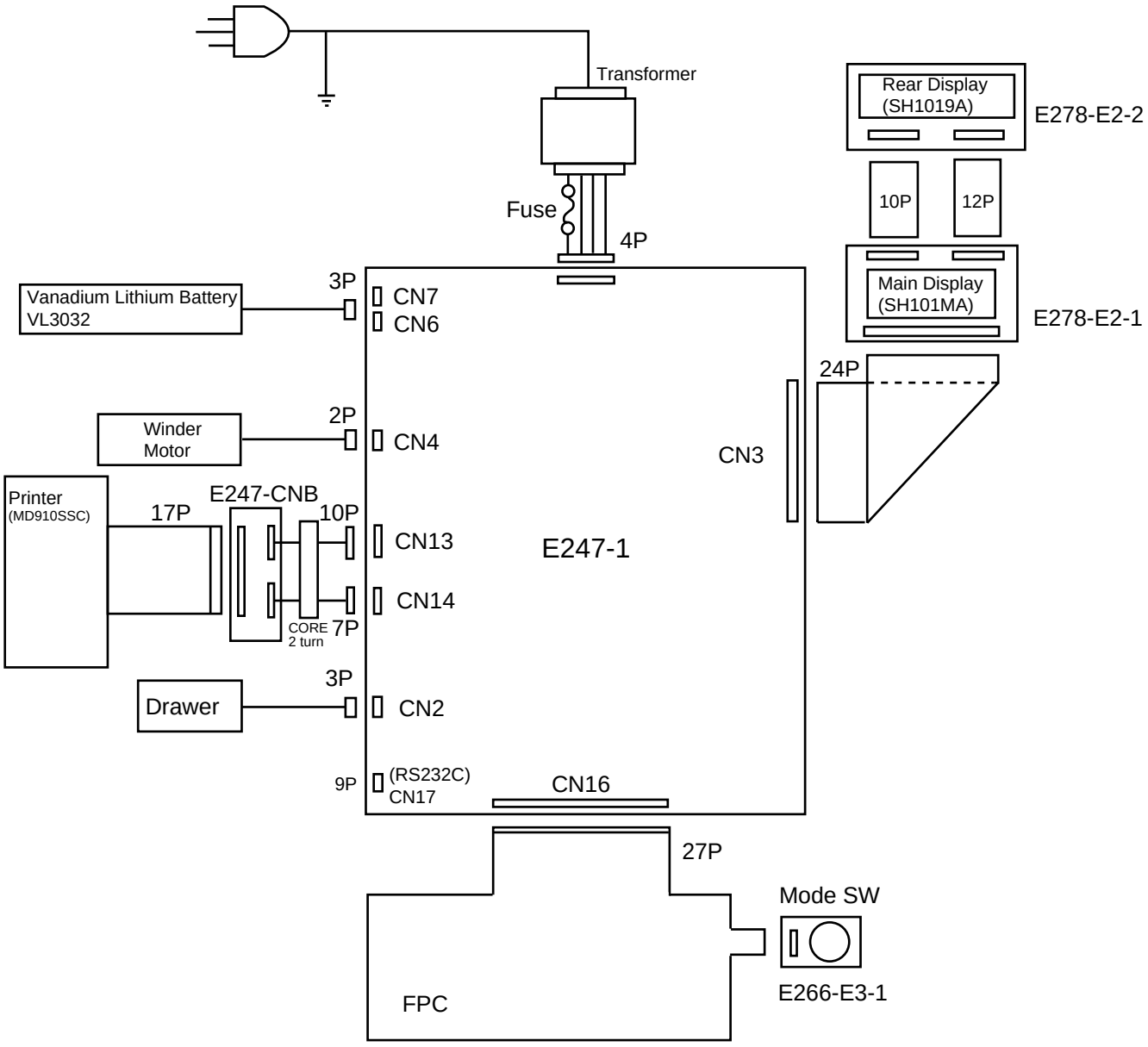
3. F-INIT (FMAC) OPERATION

1. Set the mode switch to “OFF” position.
2. Pressing the “FEED” button and turn the mode switch to “PRG” position.
3. Release the “FEED” button.
4. Press “#2” key.

Note: The location of “#2” keys, see “HARD KEY CODE TABLE” on page 16.

4. BLOCK DIAGRAM

4-1. PCB connection



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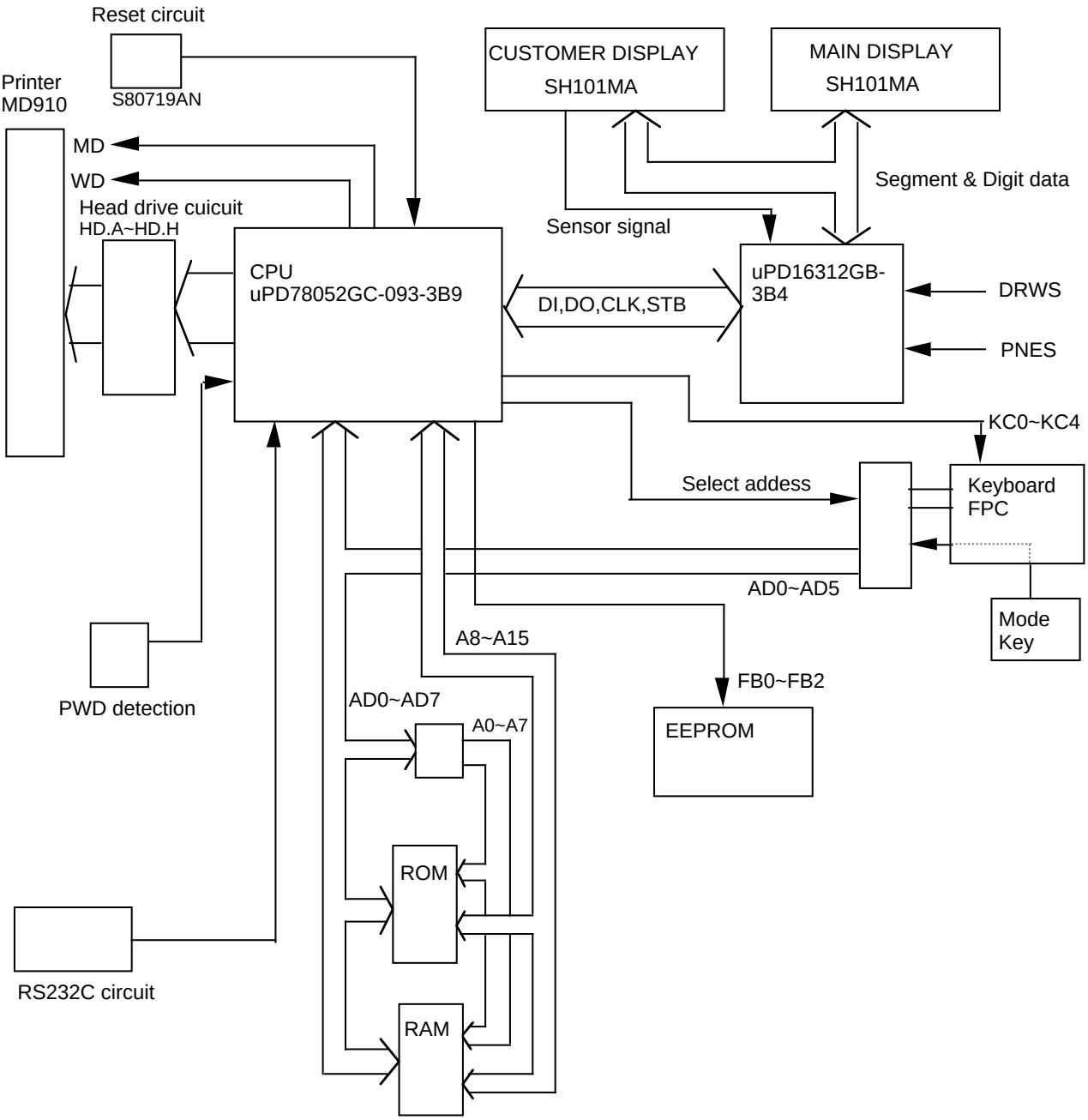
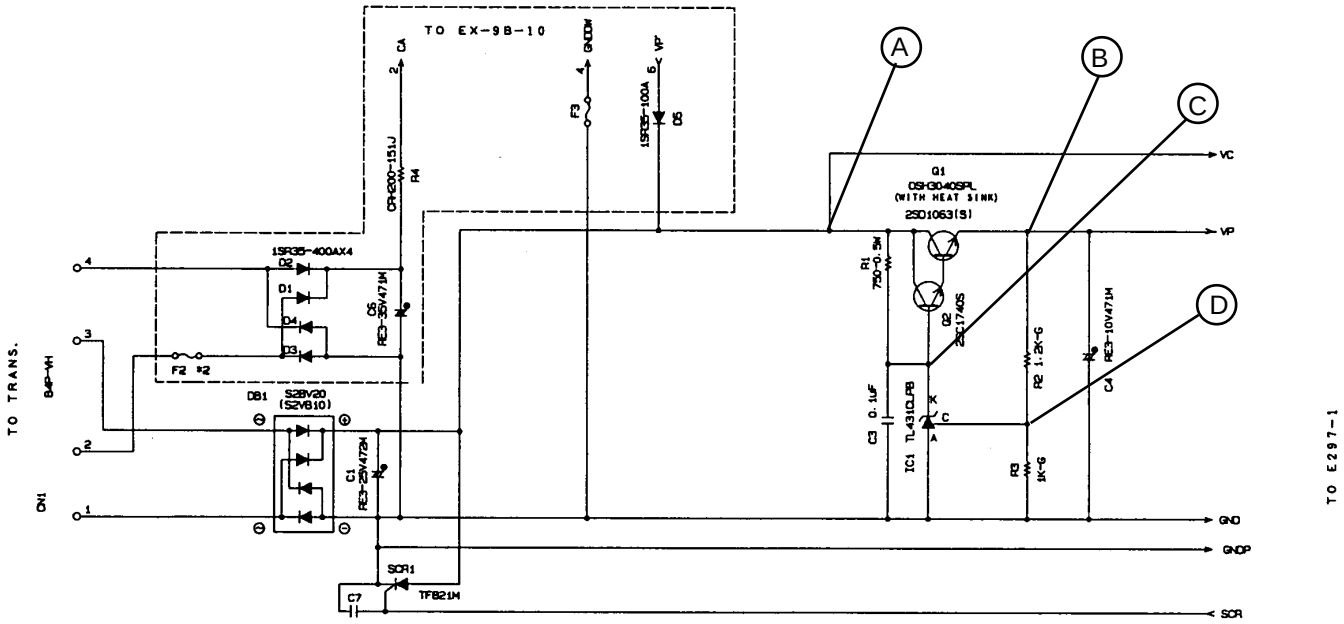
4-2. Block diagram (circuit)



5. CIRCUIT EXPLANATION

5-1. Power supply circuit



Q1: Power transistor
Q2: Voltage detection transistor

Voltage level at above check point (unit: V)

Measurement position	A	B	C	D
Voltage (V)	12.5V	5.3V	6.2V	2.47V

5-2. CPU (uPD78052GC-093-3B9)

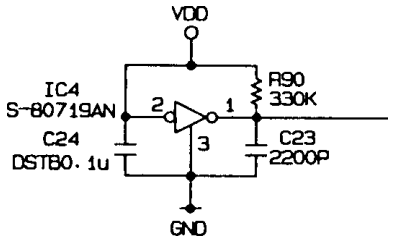
Pin No.	Signal	Description	In/Out	Status of Power On	Status of Power OFF
1	FB3	Not used	—	—	—
2	FB4	RAM bank 3	Out	High	High
3	FB5	RAM bank 4	Out	High	High
4	AVSS	GND	—	GND	GND
5	PGM	Chip select signal for EEPROM	Out	High	High
6	RAM	Chip select signal for RAM	Out	High	Low
7	AVREF	VDD	—	5 V	5 V
8	RXD	Receive data	In	High	High
9	TXD	Send data	Out	High	High
10	WD	Winder motor drive signal	Out	Low	Low
11	DI	Data signal from uPD16312	In	Pulse	High
12	DO	Data signal to uPD16312	Out	Pulse	High
13	CLK	Clock signal for uPD16312	Out	Pulse	High
14	STB	Data strobe signal for uPD16312	Out	Pulse	High
15	KC0	Key common signal (KC0)	Out	Pulse	High
16	KC1	Key common signal (KC1)	Out	Pulse	High
17	KC2	Key common signal (KC2)	Out	Pulse	High
18	KC3	Key common signal (KC3)	Out	Pulse	High
19	AD0	Address / Data signal (AD0)	In/Out	Pulse	High
20	AD1	Address / Data signal (AD1)	In/Out	Pulse	High
21	AD2	Address / Data signal (AD2)	In/Out	Pulse	High
22	AD3	Address / Data signal (AD3)	In/Out	Pulse	High
23	AD4	Address / Data signal (AD4)	In/Out	Pulse	High
24	AD5	Address / Data signal (AD5)	In/Out	Pulse	High
25	AD6	Address / Data signal (AD6)	In/Out	Pulse	High
26	AD7	Address / Data signal (AD7)	In/Out	Pulse	High
27	A8	Address signal (A8)	Out	Pulse	High
28	A9	Address signal (A9)	Out	Pulse	High
29	A10	Address signal (A10)	Out	Pulse	High
30	A11	Address signal (A11)	Out	Pulse	High
31	A12	Address signal (A12)	Out	Pulse	High
32	A13	Address signal (A13)	Out	Pulse	High
33	VSS	GND	—	GND	GND
34	A14	Address signal (A14)	Out	Pulse	High
35	A15	Address signal (A15)	Out	Pulse	High
36	INIT	PAD2 status	—	—	—
37	VPP	PAD1 status	—	—	—
38	DSR	Data set ready signal	In	High	High
39	KC4	Key common signal (KC4)	Out	Pulse	High
40	RD	Output enable signal of RAM/ROM (RD)	Out	Pulse	High
41	WR	Write enable signal of RAM (WR)	Out	Pulse	High
42	RA14	Address signal of ROM (Bank 0)	Out	High	High
43	ASTB	Latch enable for Address decoder (ASTB)	Out	Pulse	Low
44	KI12	Key input signal (KI12)	In	High	High
45	KI13	Key input signal (KI13)	In	High	High
46	RA16	Address signal of ROM (Bank2)	Out	High	High
47	RA15	Address signal of ROM (Bank 1)	Out	High	High
48	MD	Motor drive signal of printer (MD)	Out	Low	Low
49	DRW	Drawer drive signal (DRW)	Out	Low	Low
50	BUZ	Buzzer signal (BUZZ)	Out	Low	Low
51	FD	Paper feed signal of printer (FD)	Out	Low	Low
52	HD.A	Head drive signal of printer (HD.A)	Out	Low	Low
53	HD.B	Head drive signal of printer (HD.B)	Out	Low	Low
54	HD.C	Head drive signal of printer (HD.C)	Out	Low	Low
55	HD.D	Head drive signal of printer (HD.D)	Out	Low	Low

Pin No.	Signal	Description	In/Out	Status of Power On	Status of Power OFF
56	HD.E	Head drive signal of printer (HD.E)	Out	Low	Low
57	HD.F	Head drive signal of printer (HD.F)	Out	Low	Low
58	HD.G	Head drive signal of printer (HD.G)	Out	Low	Low
59	HD.H	Head drive signal of printer (HD.H)	Out	Low	Low
60	RESET	Reset signal (RESET)	In	High	High
61	DP	Dot pulse form printer (DP)	In	Low	High
62	RP	Reset pulse from printer (RP)	In	High	High
63	OFF	Mode key status (OFF)	Out	High	Low
64	PWD	Power down signal (PWD)	In	Low	High
65	RB0	Address signal for RAM (Bank 0)	Out	High	High
66	RB1	Address signal for RAM (Bank 1)	Out	High	High
67	RB2	Address signal for RAM (Bank 2)	Out	High	High
68	VDD	VDD	—	5 V	5 V
69	X2	System clock (5 MHz)	In	Pulse	High
70	X1	System clock (5 MHz)	In	Pulse	High
71	IC	GND	—	GND	GND
72	XT2	Sub system clock (32.768 KHz)	In	Pulse	Pulse
73	XT1	Sub system clock (32.768 KHz)	In	Pulse	Pulse
74	AVDD	VDD	—	5 V	5 V
75	AVREF0	VCC	—	GND	GND
76	BAT	Low battery signal	In	High	High
77	VPP.S	VPP detection signal (VPP.S)	In	Low	Low
78	FB0	Address signal of Fiscal ROM bank 0	Out	High	High
79	FB1	Address signal of Fiscal ROM bank 1	Out	High	High
80	FB2	Address signal of Fiscal ROM bank 2	Out	High	High

5-3. Display controller (uPD16312GB-3B4)

Pin No.	Signal	Description	In/Out	Status of Power On	Status of Power OFF
1	SW1	Not used (GND)	—	GND	GND
2	SW2	Not used (GND)	—	GND	GND
3	SW3	Not used (GND)	—	GND	GND
4	SW4	Not used (GND)	—	GND	GND
5	DOUT	Data out signal to CPU	Out	High	High
6	DIN	Data in signal from CPU	In	Pulse	High
7	VSS	GND	—	GND	GND
8	CLK	Clock signal (CLK)	In	Pulse	High
9	STB	Data strobe signal (STB)	In	Pulse	High
10	KEY1	Not used	—	—	—
11	KEY2	Peper near end sensor signal (PNES)	In	High	High
12	KEY3	Drawer sensor signal (DRW.S)	In	High	High
13	KEY4	VCC	—	5 V	5 V
14	VDD	VCC	—	5 V	5 V
15	SEG1	Display segment signal (Sa)	Out	Pulse	Low
16	SEG2	Display segment signal (Sb)	Out	Pulse	Low
17	SEG3	Display segment signal (Sc)	Out	Pulse	Low
18	SEG4	Display segment signal (Sd)	Out	Pulse	Low
19	SEG5	Display segment signal (Se)	Out	Pulse	Low
20	SEG6	Display segment signal (Sf)	Out	Pulse	Low
21	SEG7	Display segment signal (Sg)	Out	Pulse	Low
22	SEG8	Display segment signal (Sdp)	Out	Pulse	Low
23	SEG9	Display segment signal (Str)	Out	Pulse	Low
24	SEG10	Display segment common signal (Scom)	Out	Pulse	Low
25	SEG11	Not used		Low	Low
26	SEG12	Not used		Low	Low
27	VEE	Power for display (-VN)	—	-32 V	-32 V
28	GRD10	Display digit signal (G10)	Out	Pulse	Low
29	GRD9	Display digit signal (G9)	Out	Pulse	Low
30	GRD8	Display digit signal (G8)	Out	Pulse	Low
31	GRD7	Display digit signal (G7)	Out	Pulse	Low
32	GRD6	Display digit signal (G6)	Out	Pulse	Low
33	GRD5	Display digit signal (G5)	Out	Pulse	Low
34	GRD4	Display digit signal (G4)	Out	Pulse	Low
35	GRD3	Display digit signal (G3)	Out	Pulse	Low
36	GRD2	Display digit signal (G2)	Out	Pulse	Low
37	GRD1	Display digit signal (G1)	Out	Pulse	Low
38	VDD	VCC	—	5 V	5 V
39	LED4	Not used	—	Pulse	Low
40	LED3	Not used	—	Pulse	Low
41	LED2	Not used	—	Pulse	Low
42	LED1	Not used	—	Pulse	Low
43	VSS	GND	—	GND	GND
44	OSC	System clock (500 KHz)	In	Pulse	Pulse

5-4. Initilize IC (Reset circuit)

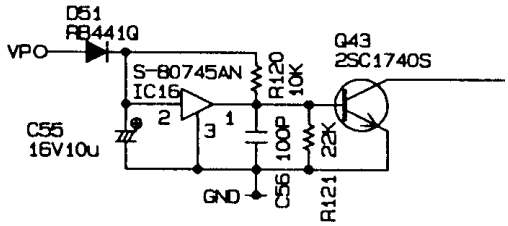


VDD: Voltage of memory protection battery

To Pin No.60 of CPU

When the voltage level at Pin No.60 of CPU is not stabilized, CPU does not work properly in rare case. Therefore, this machine uses the initialize IC for stabilizing the voltage.
Even the voltage level of VDD (Pin No.2) is changed, Pin No.1 of initilize IC outputs stabilized 5 volts. When the VDD voltage become less than 1.9 V, the initialize IC send a reset signal to CPU.

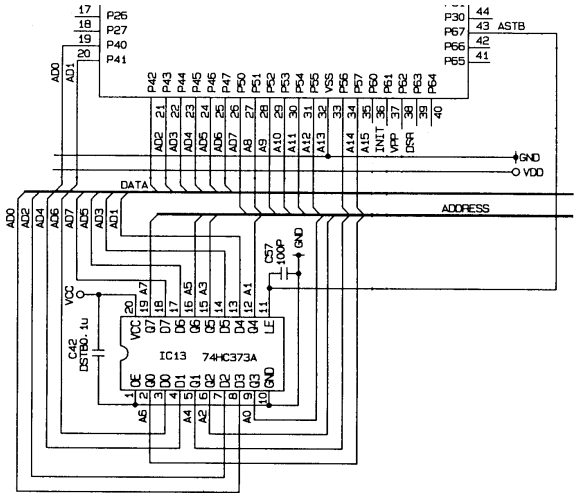
5-5. Power down detection circuit (PWD)



To Pin No.64 of CPU

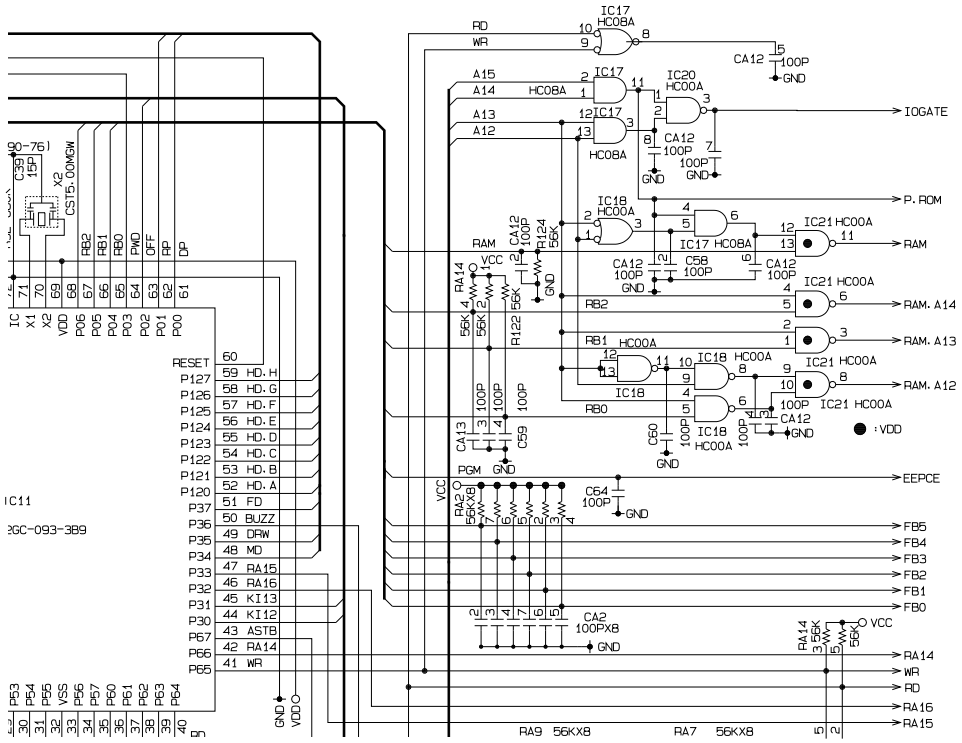
When the VP voltage become less than 4.8 V, the pin No.1 of IC5 become “Low” level.
Then,the transistor Q44 become OFF.
When Q44 become OFF, the voltage level of pin No.64 of CPU changes to “High” level from “Low”. Then, CPU knows power failure.

5-6. Address latch circuit

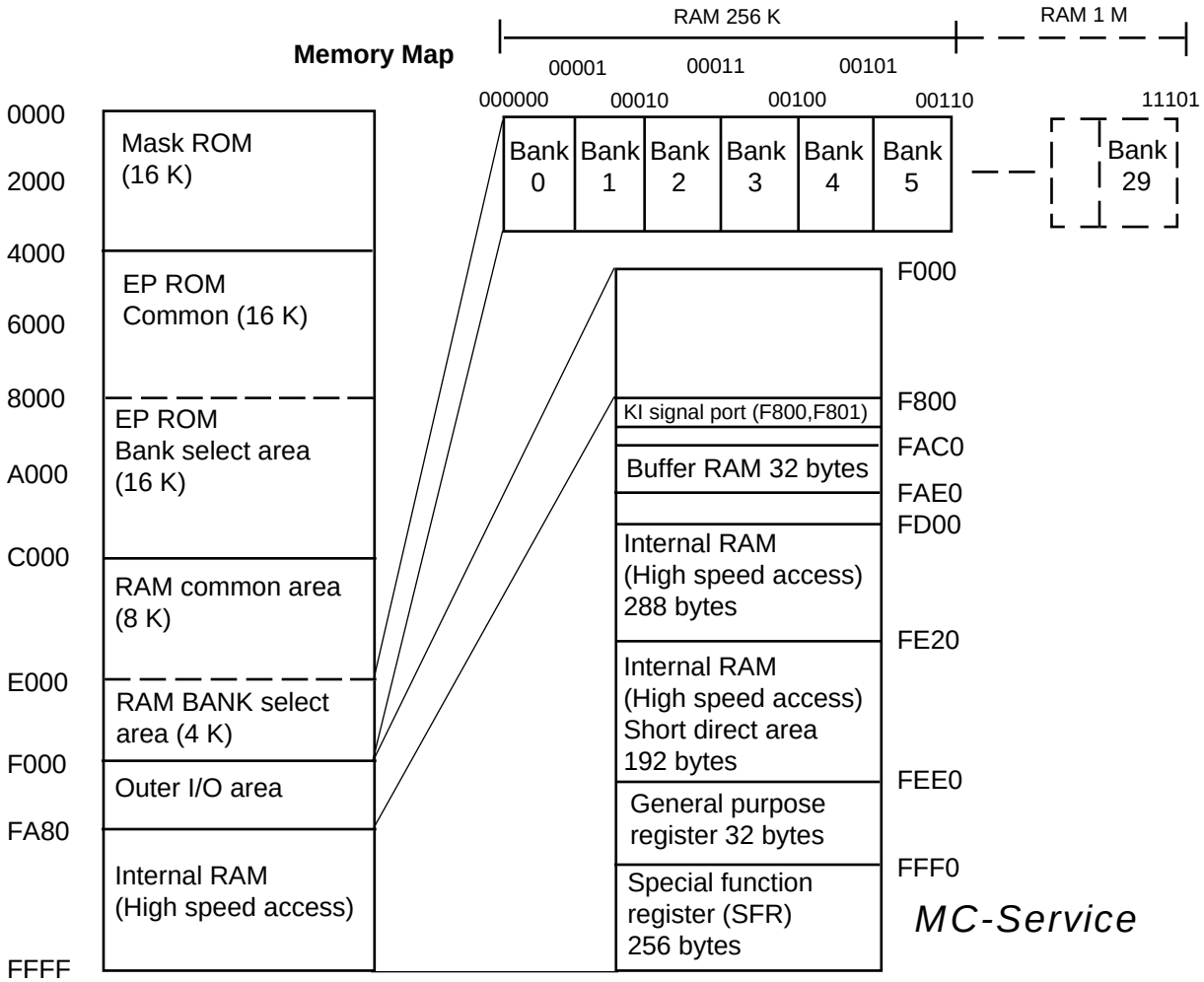


CPU uses 8 port (AD0 ~ AD7) for address bus and data bus.
To select the address, CPU use the IC13.
CPU send the address to IC13, and send ASTB signal at same time.
Then, IC13 store the address and output the address immediately.
In this way, CPU select the address and data signal.

5-7. RAM / ROM bank selection circuit



This circuit is used for address decoder for memory.



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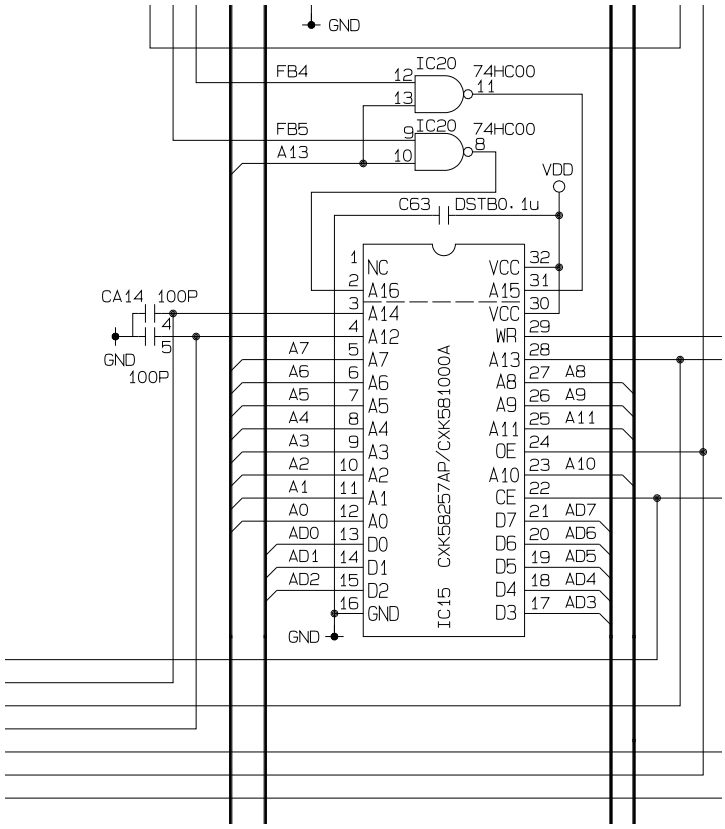
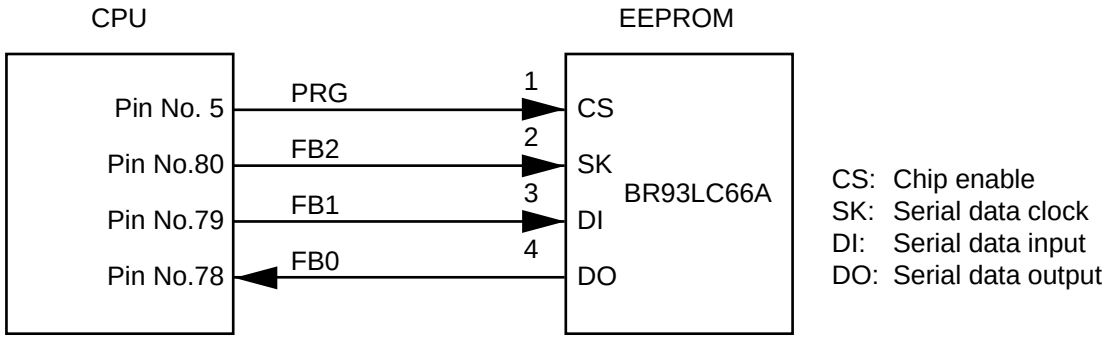
5-8. To expand the memory capacity

Standard memory capacity is 32 KB.
To expand the memory capacity to 128 KB, remove the RAM chip (CXK58257AP-70/10L) from the IC socket (Location: IC15).
Then, insert the option RAM chip RAM-530 (CXK581000AP-10LL) to the IC socket (Location: IC15).

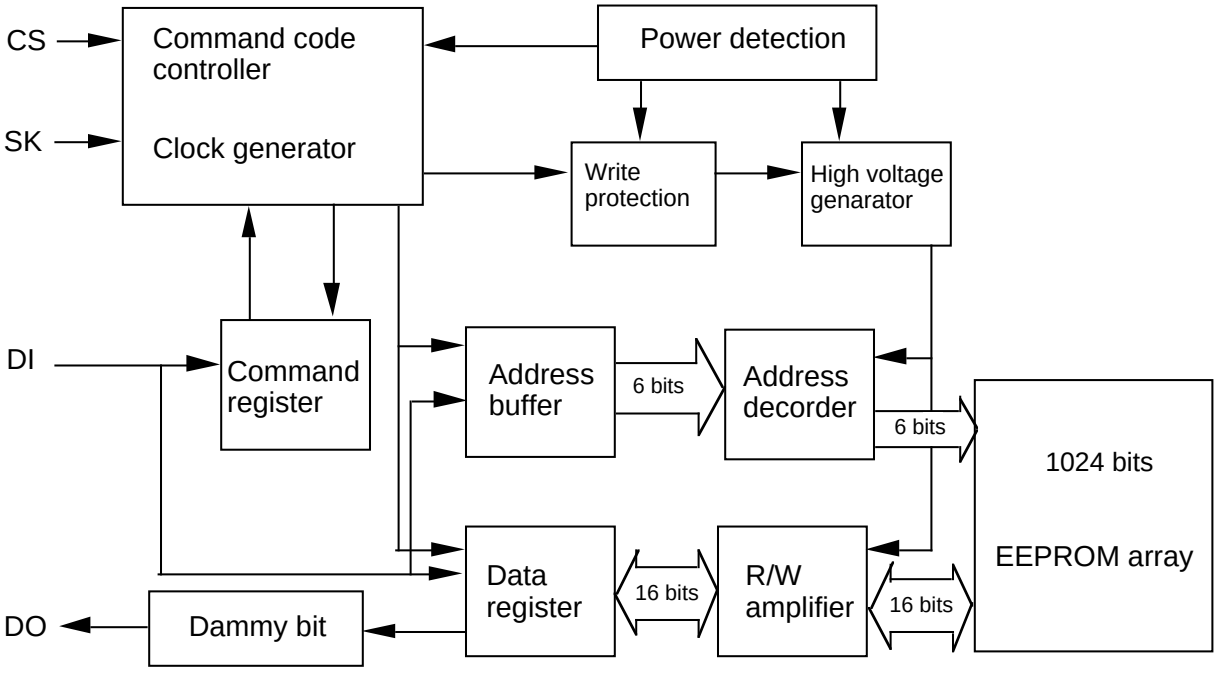


5-9. Data communication between CPU and EEPROM



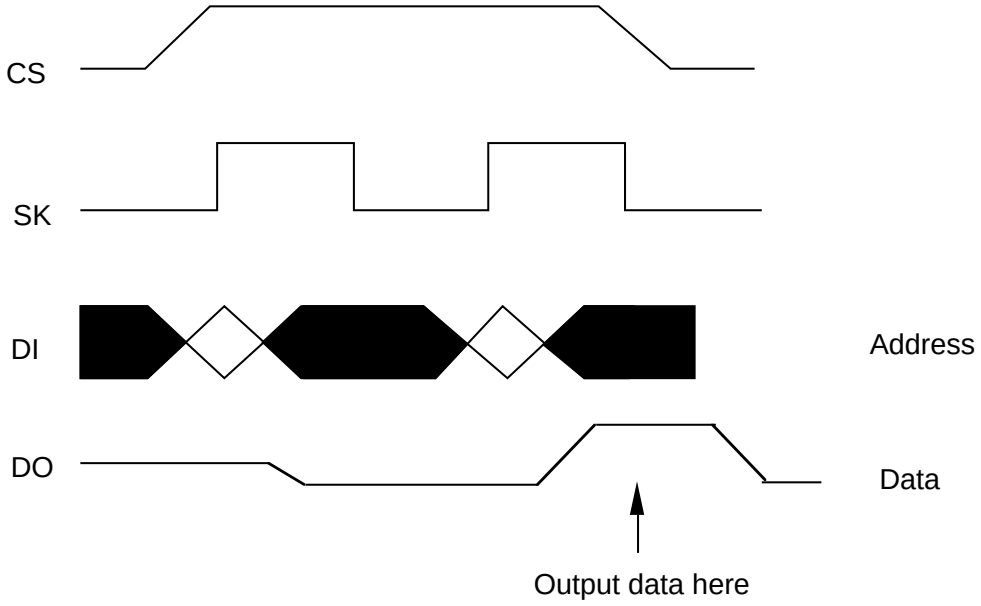
EEPROM is a memory to possible write/erase by electricity .
The BR93LC66A privides efficient nonvolatile read/write memory arranged as 64 registers of 16 bits each.

[Block diagram]



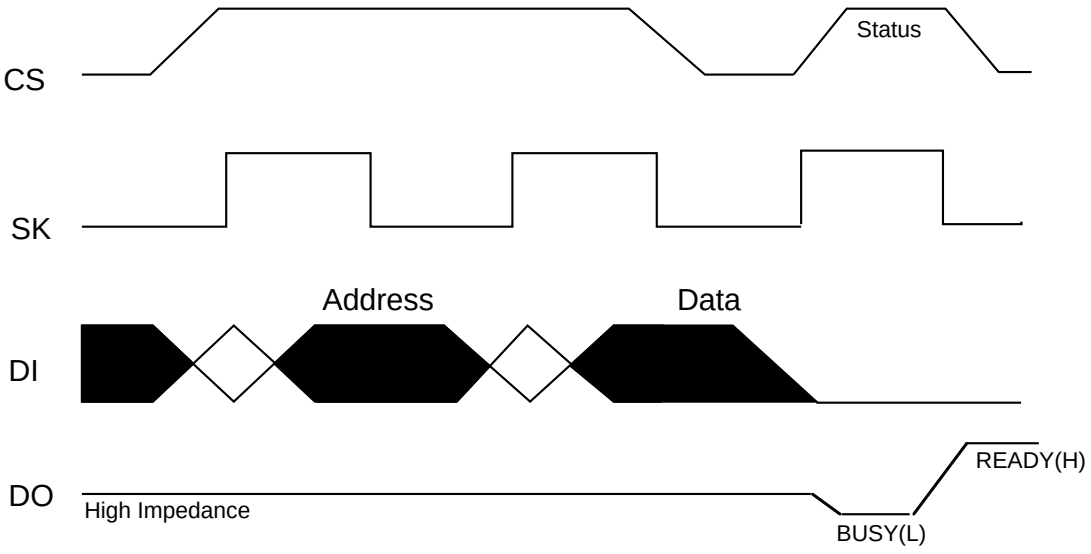
[Data reading procedure]

When the CPU read the dara of EEPROM, CPU send the CS signal and SK signal to EEPROM.
Then, CPU send the address to EEPROM, and then EEPROM send the data to CPU.



[Data writing procedure]

When the CPU save the data to EEPROM, CPU sends the CS and SK signal to EEPROM.
And CPU send the address and data to EEPROM from pin No.79.
When the EEPROM writes the data , EEPROM outputs the busy signal from DO terminal to CPU.
After finish writing, EEPROM outputs the ready signal from DO terminal to CPU.



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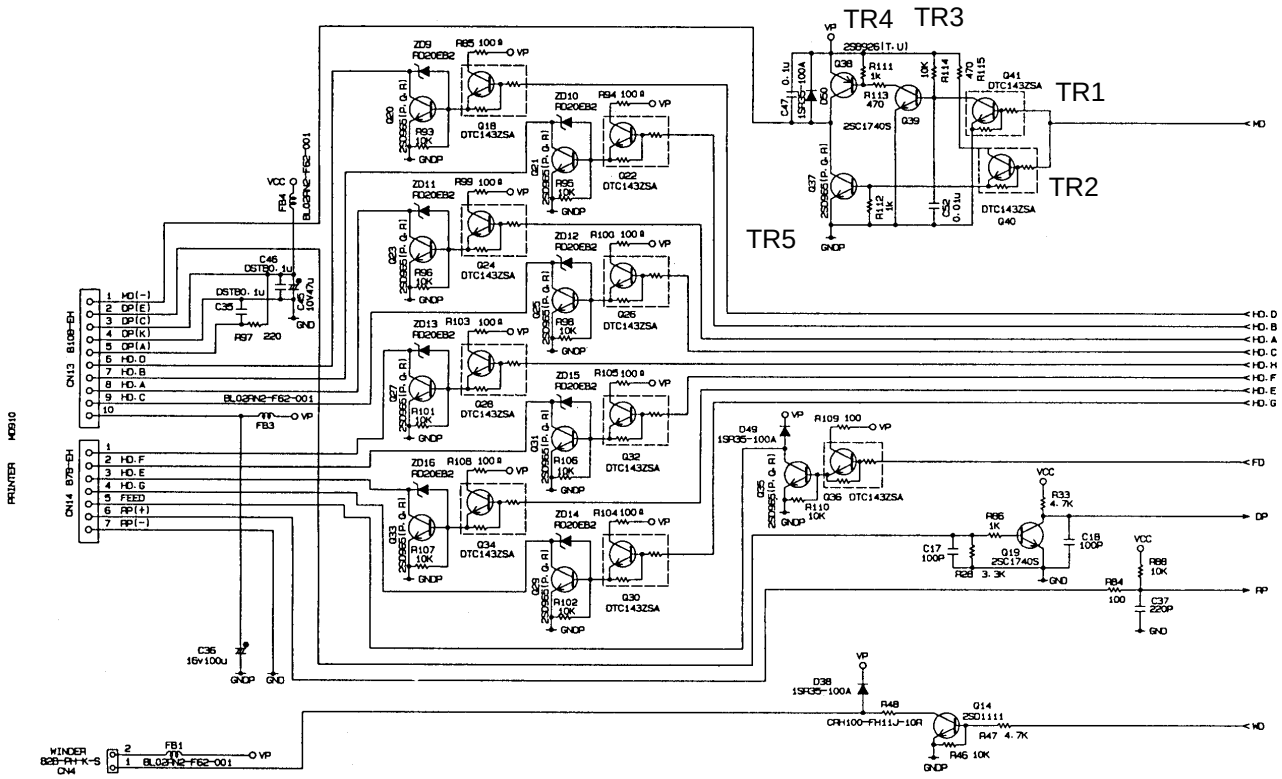
5-10.Head drive circuit for printer



Motor drive circuit

Normally, the transistor of motor drive circuit is followng condition.

TR1, TR2, TR5 :	OFF
TR3, TR4 :	ON
MD (-) signal :	VP level

When the CPU want to rotate the motor, CPU change the MD signal to “High” from “Low”. Then, TR1, TR2 and TR5 are become ON and MD (-) signal is become GND level, and then motor is rotated.

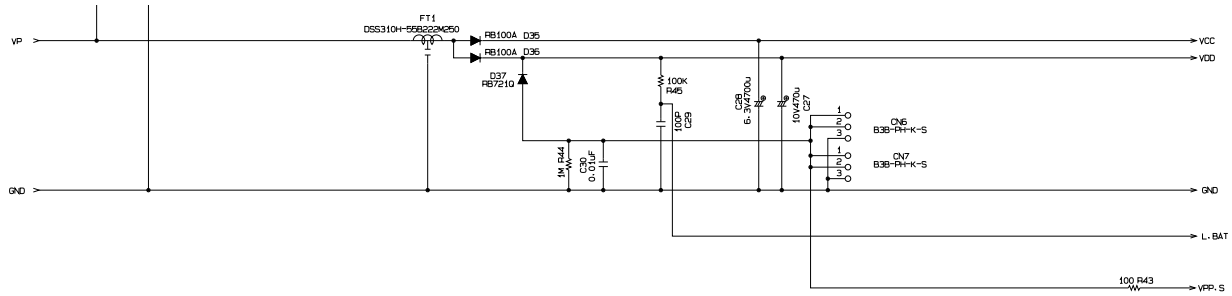
Head drive circuit

When the CPU wants to print, CPU send “High” signal from HD.A ~ HD.H terminal. This signal goes to printer unit, and then print.

RP: Reset pulse from printer
DP: Dot pulse from printer

5-11. VPP sensor circuit

Protection circuit



To prevent the circuit breakage, the protection circuit watches the voltage level of VCC, VDD and VPP.

When the each voltage level is more than following condition, this circuit cuts the voltage.

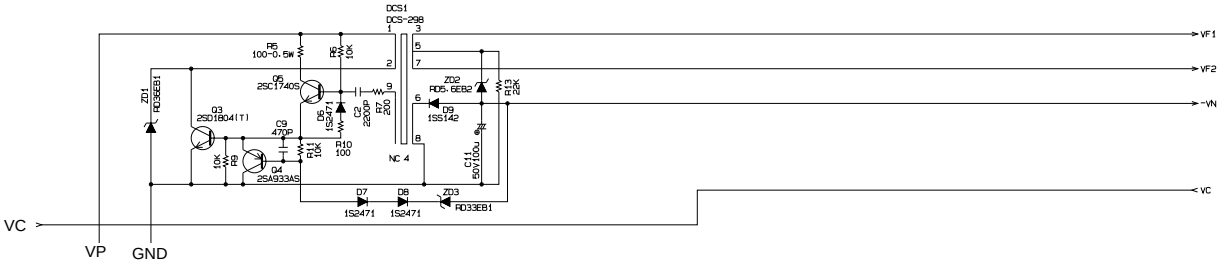
VCC,VDD: In case these voltages are become over voltage, this circuit outputs “SCR” signal(High signal) and burn out the fuse.

VPP: In case the VPP voltage is more than 15 V or less than 13.9 V, the “VPP.S” level is inverted and CPU cut the “VPP.ON” signal.

Detection voltage level (Unit: V)

VCC >= +6.5 V
VDD >= +6.5 V
+13.9 V =< VPP <=15.0 V

5-12.Power supply circuit for display



This circuit is making the power for display tube.

Voltage level:	-VN	Est. -31.2 V
	VF1 - VF2	Est. AC4.85 V

6. DIAGNOSTIC

6-1. To start the diagnostic program

1. Set the mode switch to “OFF” position.
2. Pressing the “FEED” button and turn the mode switch to “PRG” position.
3. Release the “FEED” button.
4. Input “9999900000” and press “ST” (“#2” key).
5. Diagnostic program is executed.

6-2. Check item

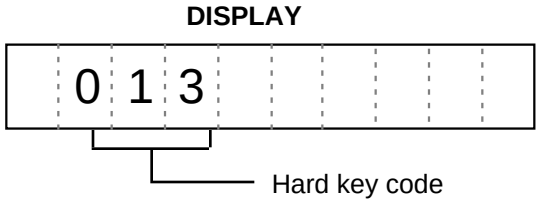
The following test can be checked in the diagnostic test.

1. Key code test
2. Switch status test
3. Individul function test

6-3. Operation of each test

1. Key code test

When pressing a key, the machine displays the following key code.



HARD KEY CODE TABLE

067	062	057	052	047	042	037	032	C	027	026	025	FEED	017
066	061	056	051	046	041	036	031	7	8	9	024	020	016
065	060	055	050	045	040	035	030	4	5	6	023	019	015
064	059	054	049	044	039	034	029	1	2	3	022	018	014
063	058	053	048	043	038	033	028	0	011	012	021	013	

“018” buttons is work for “#2” key.

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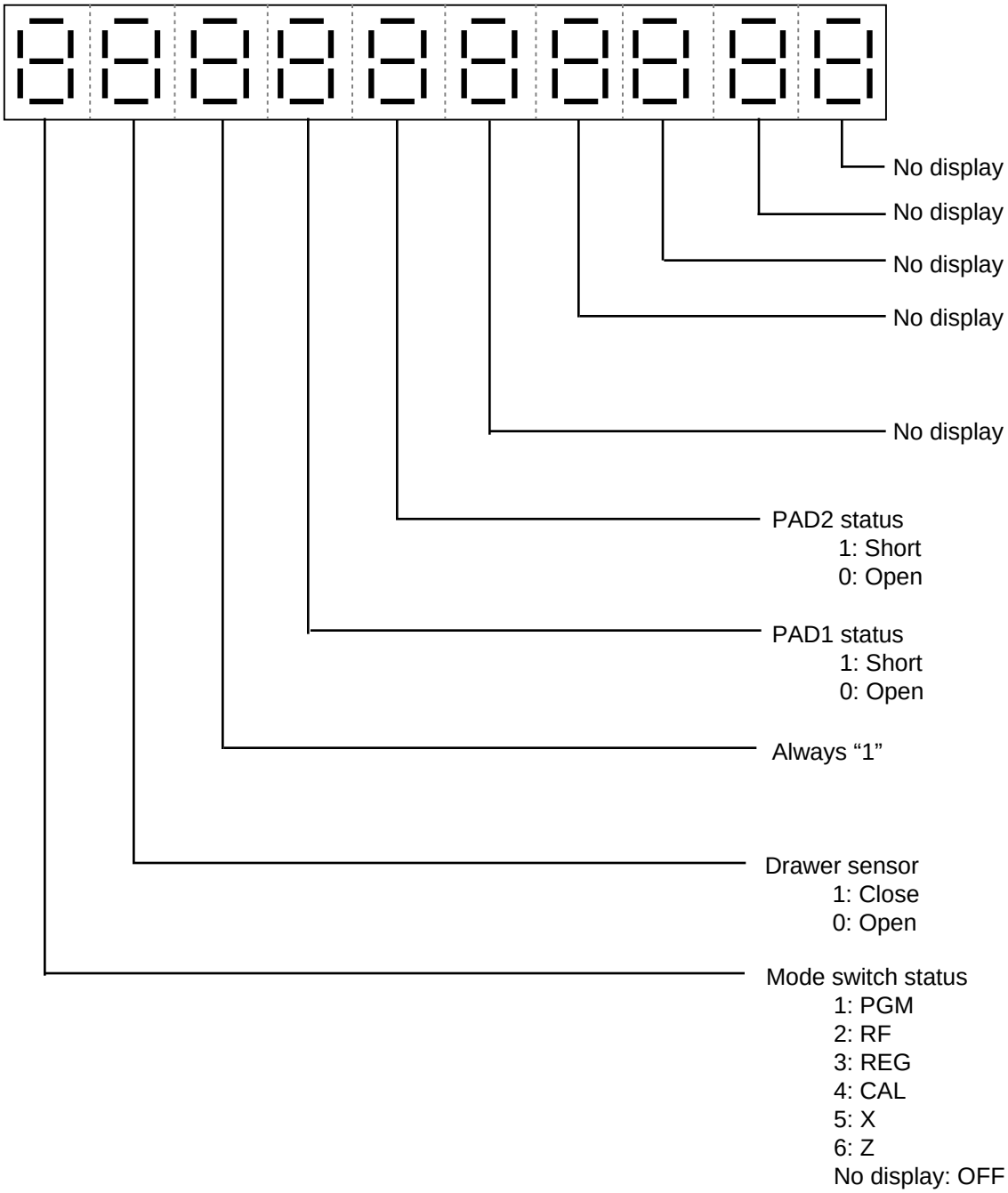
2. Switch status test

Press “C” button, the switch status is appeared on the display.

[DISPLAY]



3. Individual function test

3-1. Series test

"Y" "X" "1" + "#2" key

Y: 0: Normal test
1: Execute next test even if an error happend at ROM check sum

X: 0: Autockecking of RAM capacity
1: 256 Kbit RAM test
2: 1 Mbit RAM test

Execute the following test in order.

1. Display test
2. Check sum test of EP-ROM
3. RAM test
4. Drawer open test
5. Printing test
6. Date and Time test

1. Display test (All segment light on)

2. Ckeck sum test of EP-ROM

Normal end

```
ROM    SUM        OK
```

XX00: Check sum value

Error end

```
ROM    E R
```

XXXX : Check sum value

3. RAM test (Read/Write test)

Normal end receipt

256 Kbit RAM

```
RAM    32K        R/W      OK
```

1 Mbit RAM

```
RAM    128K       R/W      OK
```

Error end receipt

```
RAM    32K        E R
```

YY: Bank
XXXX: Address

4. Drawer open test

5. Printing test

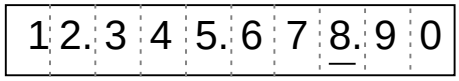
```
BBBBBBBBBBBBBBBBBBBBBB
```

6. Date and Time test

Set the date and time as follows.

Date : 31 / 12 / 96 Time : 25:59

Then, issues a receipt and display the following character.



3-2. Print test
Input “Y” “X” “2” + “#2” key.

X: 0: Print the following character continuously.
Printing speed : 45 times / Min.
1: Print the following character, open the drawer and issue a receipt
Printing speed : 25 times / Min.
Drawer open : 5 times / Min.
Receipt issue : 5 times / Min.

Y: 0: No effect
1: Print the following character without waiting time. (Continuously print)

To stop this test, press any key or turn the mode switch to “OFF” position.

Printing sample:

BBBBBBBBBBBB

3-3. EEPROM read/write test
Input “3” + “#2” key.

Execute a read/write test of EEPROM.

Printing sample:

Normal End	EEPROM R/W OK
Error End	EEPROM ER

3-4. EEPROM read only test
Input “4” + “#2” key.

Read the data continuously until power off.
Brink “-” signal on the display during checking.

Note: Be sure to execute the “3” + “#2” test before this test.

Printing sample:

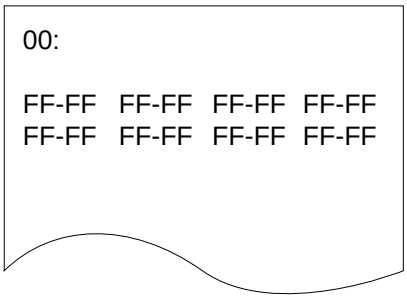
Normal End	EEPROM READ OK
Error End	EEPROM ER

Display:

3-5. EEPROM Address dump
Input “2” “4” + “#2” key.

Execute the address dump of EEPROM on receipt.

Printing sample:



← Address (00 ~ FF)

← Data

3-6. RAM read only test
Input “X” “5” + “#2” key.

X: 0: Read the data from start to end address and issues receipt.
1: Read the data from start to end address continuously until power off.
Brink " - " signal on the display during checking.

Note: Be sure to execute the series test (1 + #2) before this test.

256 Kbit check receipt

```
RAM    32K          READ       OK
```

1 Mbit check receipt

```
RAM    128K         READ       OK
```

Display

3-7. EEPROM FORMAT
Input “9” “6” + “#2” key.

Erase the all data in EEPROM.

Printing sample:

Normal End

```
EEPROM    FORMAT
```

Error End

```
EEPROM    ER
```

3-8. Factory Init

Input “8” “6” + “#2” key.

Execute intilize operation according to PAD status.

[1] Erase the all data in EEPROM
[2] Format the EEPROM
[3] Set the calender and time to zero. (00-00-00, 00-00)

Printing sample:

Normal End

```
#                          86
  THANK YOU
  CALL AGAIN


00-00-00  00:00
                       000001

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    COMPUTER CO.,LTD.
  All rights reserved.

V.3006
INI.................4  0
```

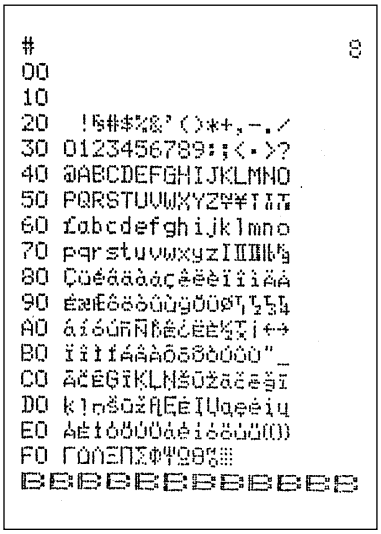
Error End

```
EEPROM    ER
```

3-9. All character print test

Input “8” + “#2” key.

“8” + “#2”: Pirnts all character on receipt once.
“1” “8” + “#2”: Prints all character on receipt continuously.
To stop this test, press any key or turn the mode switch to “OFF” position.



3-10. Time display test

Input “9” + “#2” key.

Display the time.

To stop this test, press any key or turn the mode switch to “OFF” position.

		2	3	-	5	9		0	0

3-11. RS232C port test

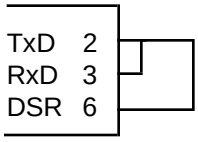
Input “2” “0” “7” + “#2” key.

Execute the RS232C loop back test continuously using loop back connector.
In case an error happens, the machine issues an error receipt then stop this test.

Test description: 1: Level check at DSR signal (Low/High)
2: Send the data (05Ah) from TxD and receive it at RxD terminal.

To stop this test, turn the mode switch to “OFF” position.

Loop back connection:



Normal End

232C	OK	

Error End

232C	ER	X

X: Error code
- 0: Time over
- 1: Over run error
- 2: Framing error
- 3: RXD line data error
- 4: DSR line receive error

6-4. To exit the diagnostic test

To escape the diagnostic test mode, execute “INITIALIZE (MAC) operation”.

7. ERROR CODE

7-1. Operation error code

Error codes appear on display whenever you make a mistake during operation.

Error Code	Meaning	Action
E01	Mode switch position changed before finalization.	Return the mode switch to its original setting and finalize the operation.
E03	The signed on clerk differs from the clerk performed the tracking check registration. [REG/RF mode]	Input correct check number or assign the proper clerk number.
E08	Registration without entering a clerk number.	Enter a clerk number.
E11	Registration is made while the cash drawer is opened. [REG/RF mode]	Close the cash drawer.
E17	Check number error. [REG/RF mode]	Input check number.
E19	Registration without customer number. [REG/RF mode]	Enter a customer number.
E27	Transaction cancel buffer full. [REG/RF mode]	Finalize the transaction.
E31	Finalization of a transaction attempted without confirming the subtotal. [REG/RF mode]	Press the SUB TOTAL key.
E33	Finalize operation attempted without entering amount tender. [REG/RF mode]	Enter the amount tendered.
E35	Change amount over. [REG/RF mode]	Ask small note to the customer.
E38	Read/reset operation without declaring cash in drawer. This error appears only when this function is activated. [X/Z mode]	Perform money declaration.
E40	Guest receipt compulsory Error. [REG/RF mode]	Issue the guest receipt.
E50	Memory full for check Tracking number. [REG/RF mode]	Close the check number.
E51	Check number is used. [REG/RF mode]	Input other check number.
E53	Check number does not found. [REG/RF mode]	Input other check number.
E94	Printer error.	Turn the power off, and remove jammed paper from the printer.

7-2. System lock code

The following error code appears on display and receipt when the machine is lock up.
Execute the Flag MAC or MAC operation to clear these errors.

Error code: Display: X - - - - - - - - -
Receipt: X ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! !

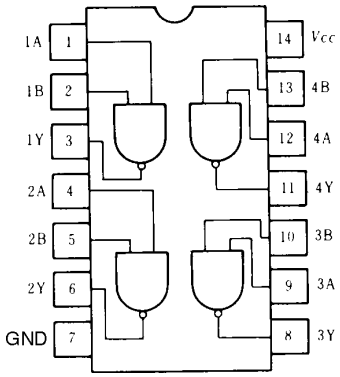
X: Lock code

Error sample: 3 ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! !

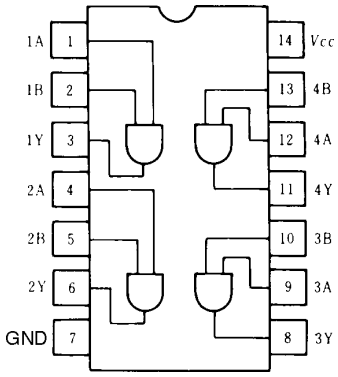
Error code	Error Name	Meaning
1	Sequential trap	The machine try to write to accumulator when the CPU is hung up.
2	Memory write error	Error happens when the CPU write the data to memory.
3	Trap error	Abnormal address
6	Timer error	Interrupt timer error
7	Stack over	Abnormal address or stack pointer has an error
0	Other error	CPU executes wrong jump vector before detect 1, 3 and 6 error code.

8. IC DATA

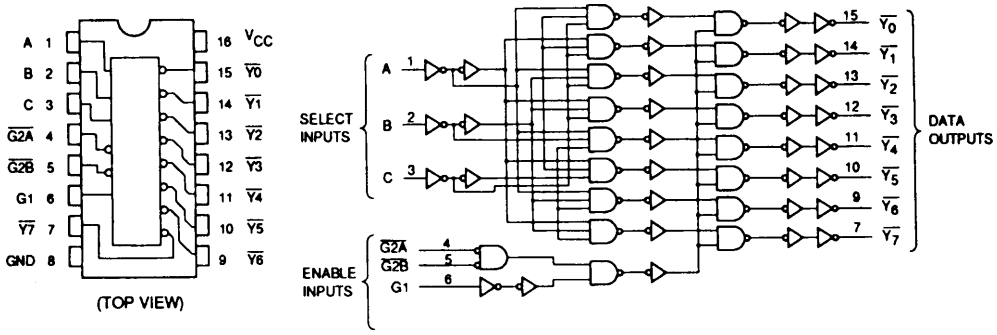
1. TC74HC00AP



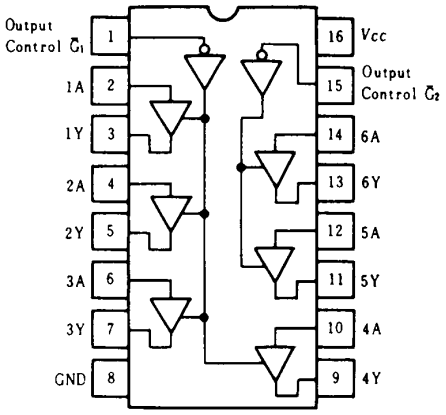
2. TC74HC08AP



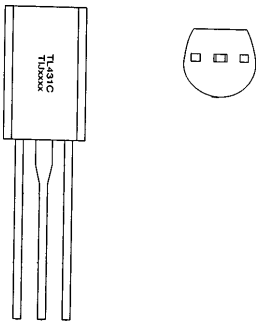
3. TC74HC138

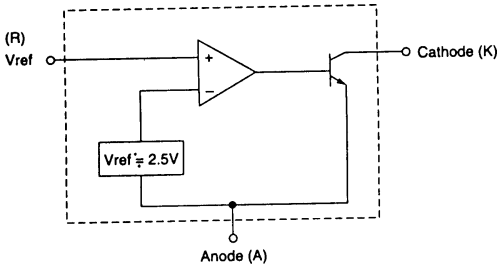


4. TC74HC367AP

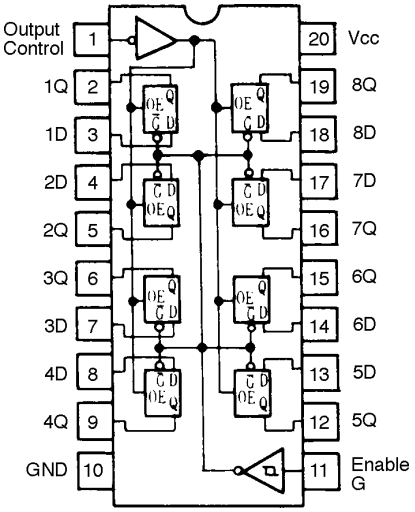


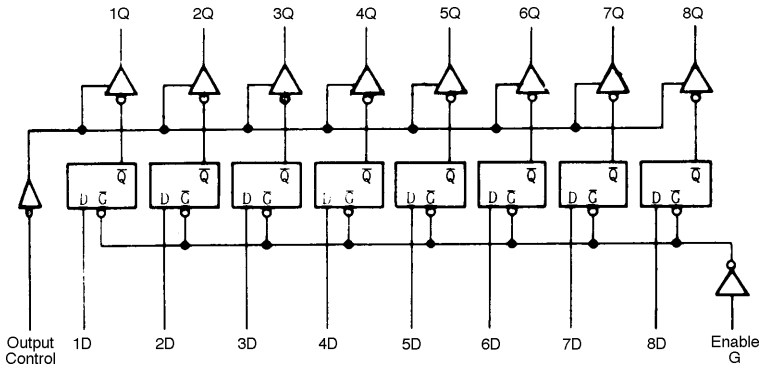
5. TL431CLPB



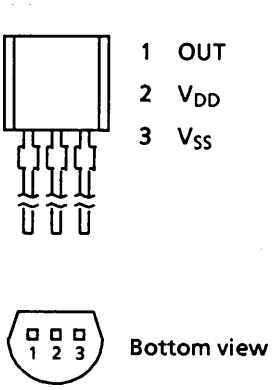


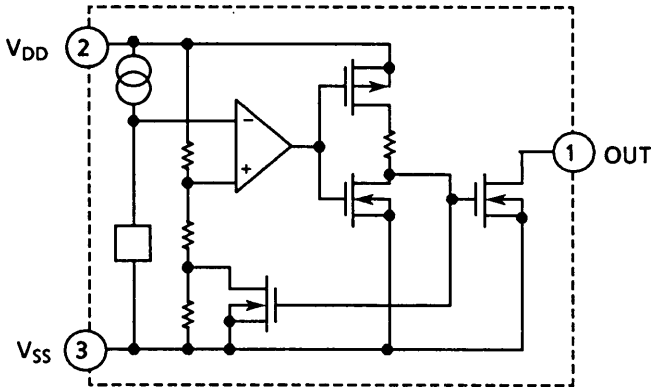
6. TC74HC373AP



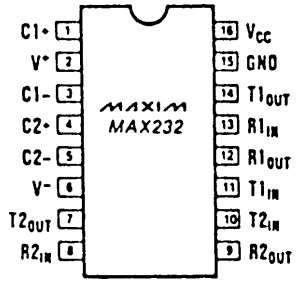


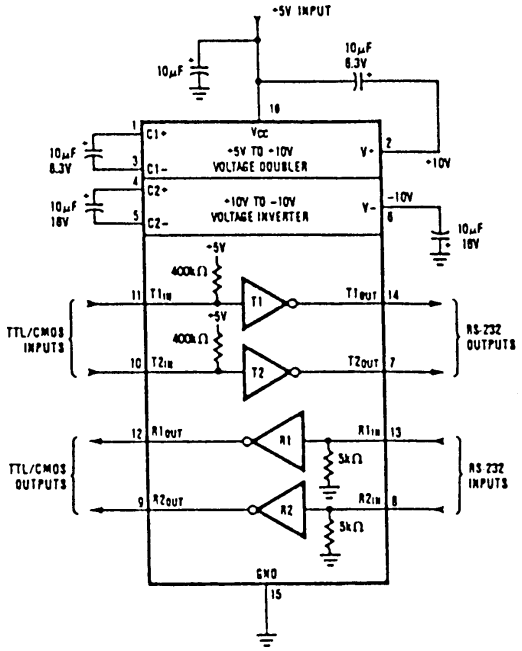
7. S-80745 / S-80719





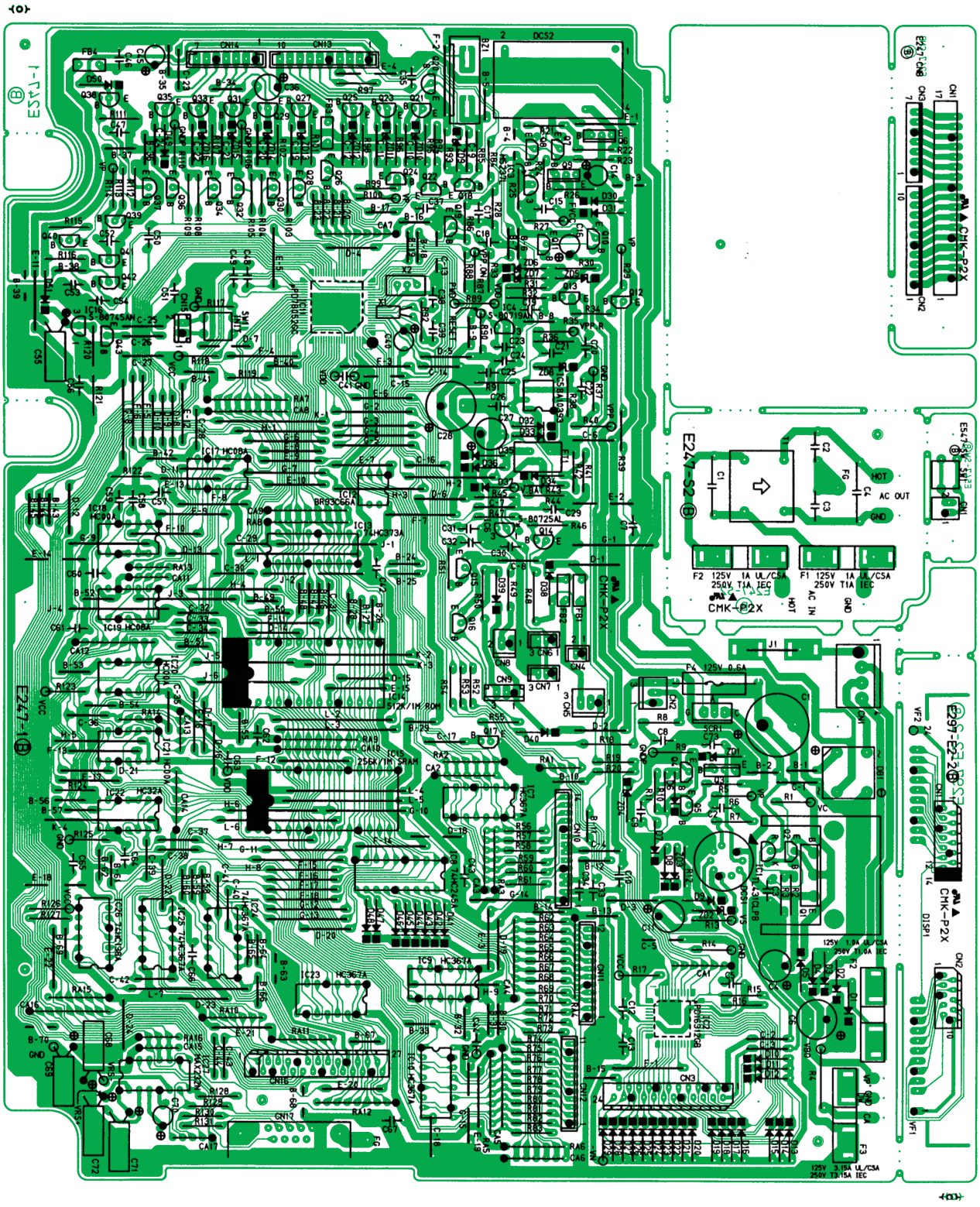
8. MAX232



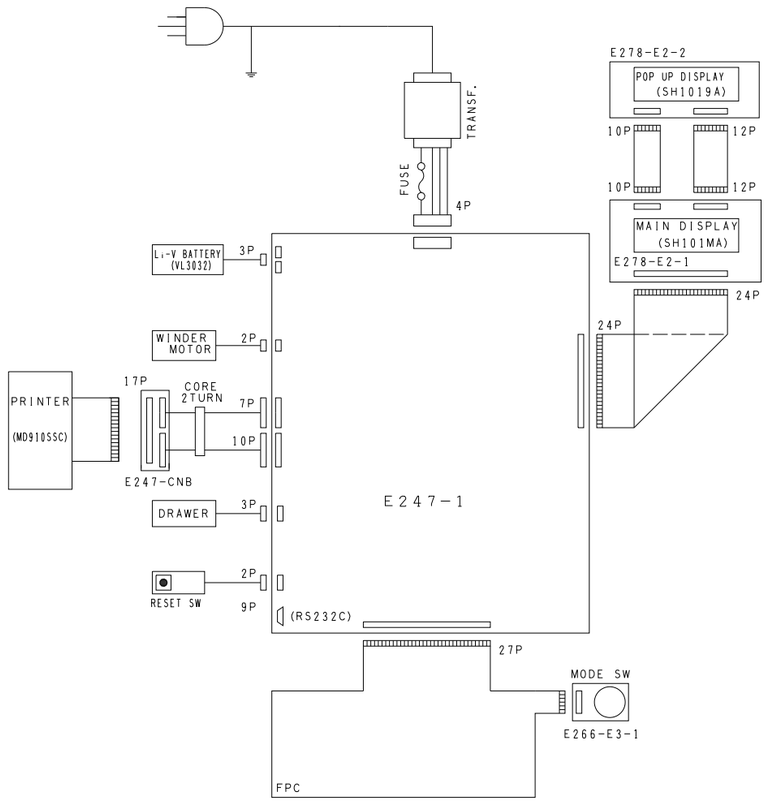


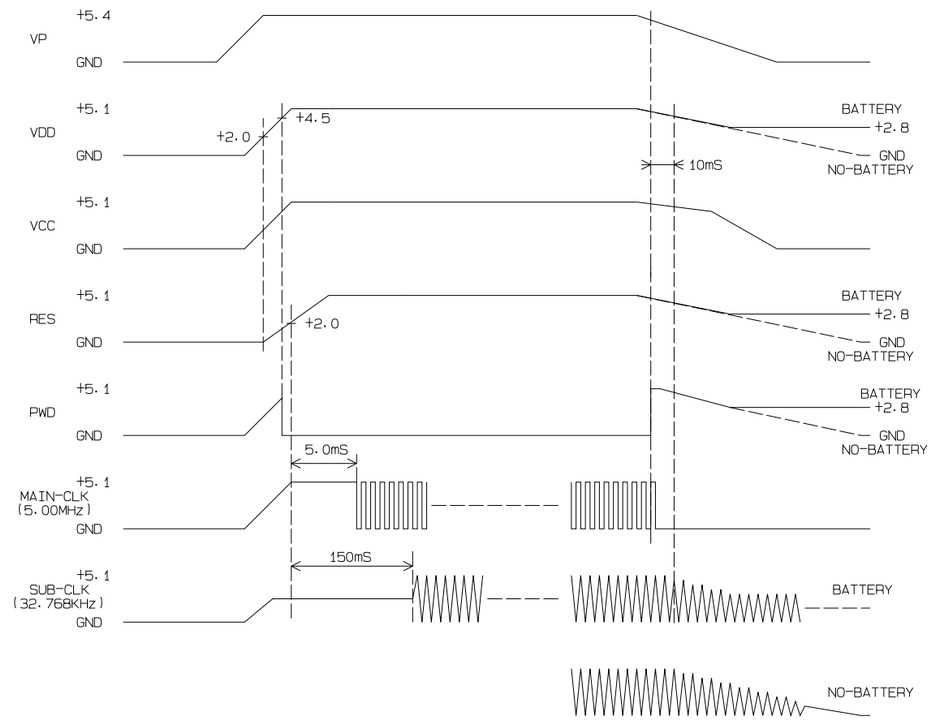
9. PCB LAYOUT

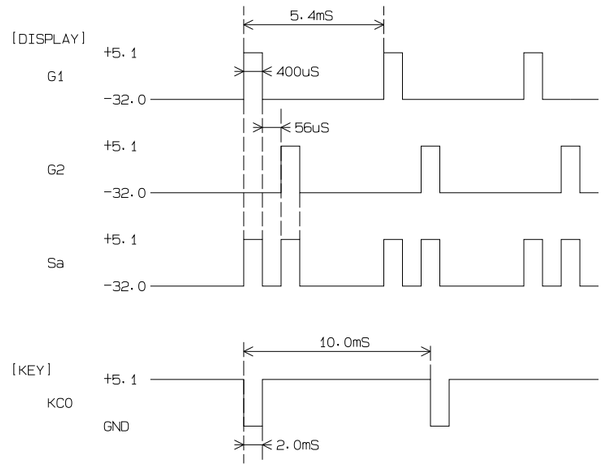
MAIN PCB (E247-1) and Connector PCB (E247-CNB)



10. CIRCUIT DIAGRAMS





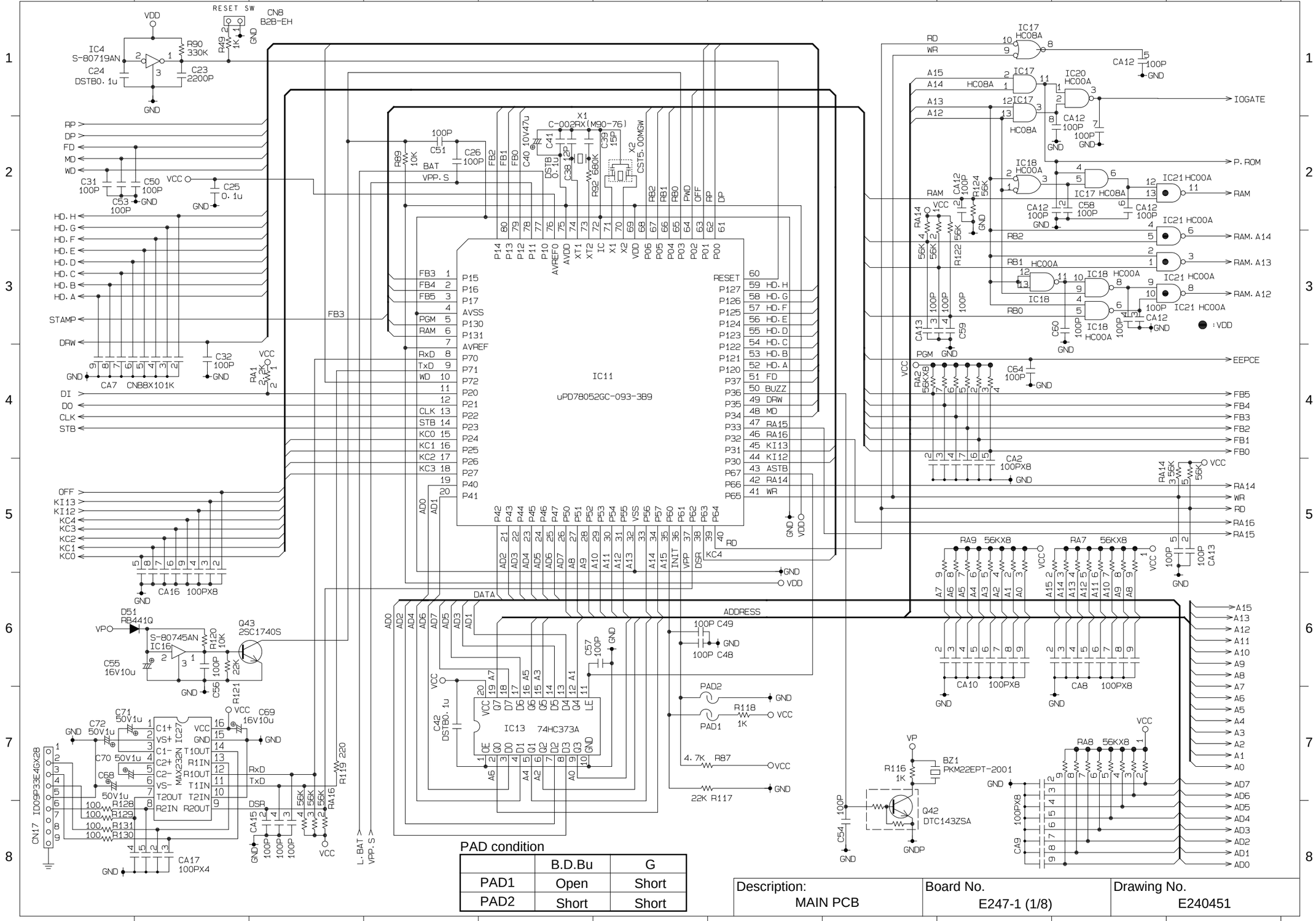


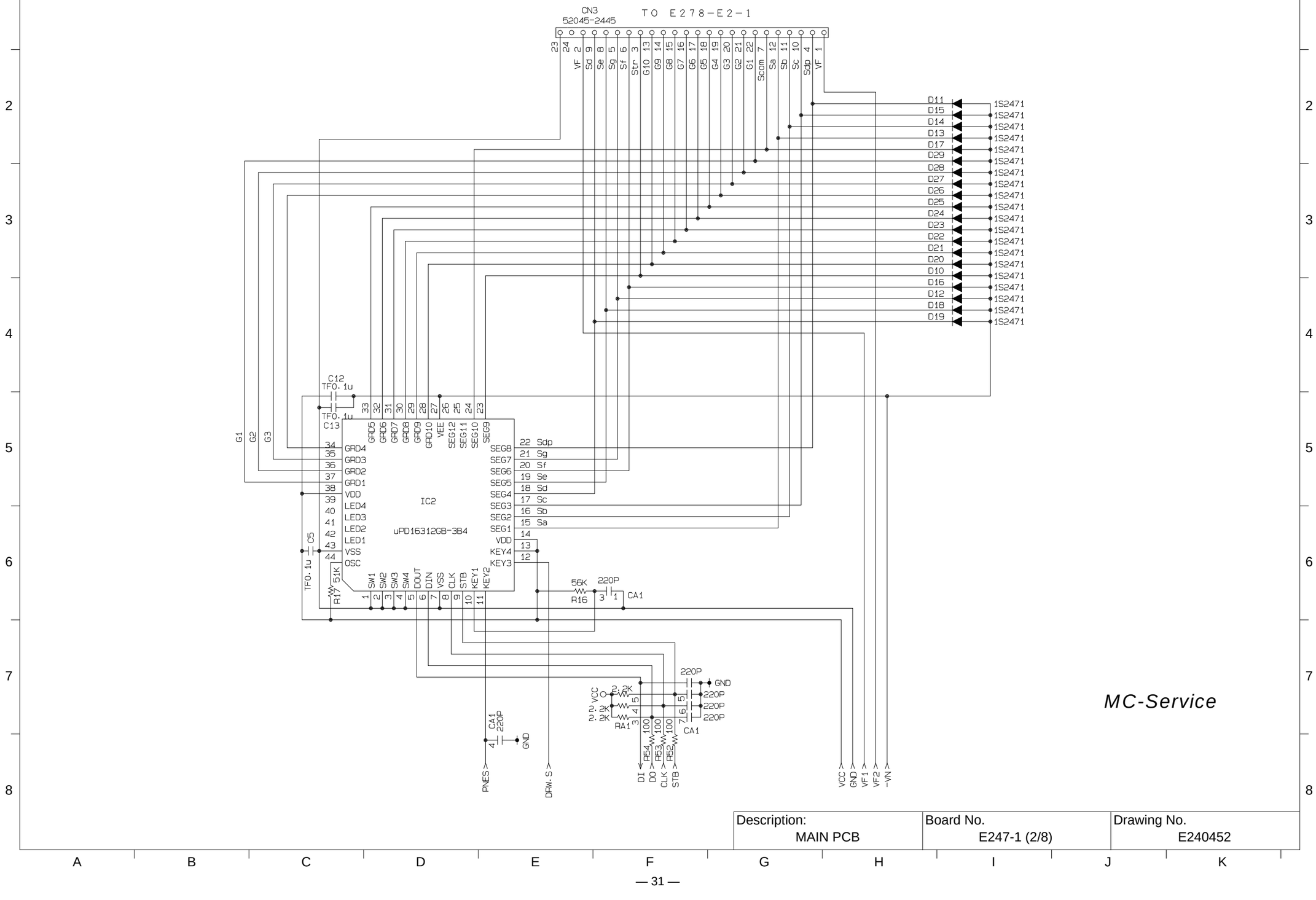
(EUROPE, UK, GERMANY, LIMITED AREAS SPEC.)
EX-547*B, D, G, BU

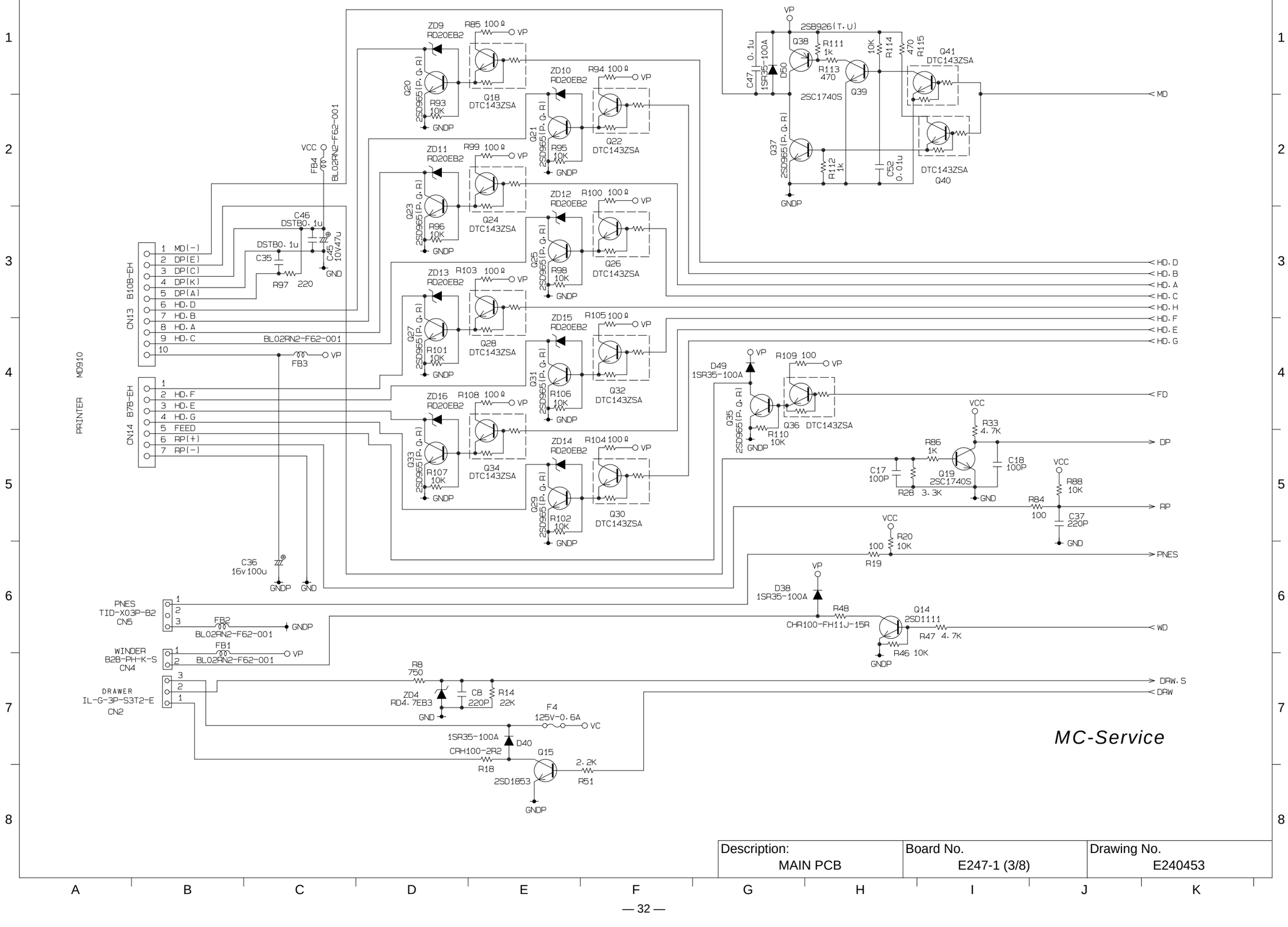
5	10	15	20	25	30	GUEST / POST RECEIPT	MENU SHIFT	C C/AC	X / DATE TIME	OPEN / CLK#	PLU	FEED	RECEIPT ON/OFF
4	9	14	19	24	29	%	ADD/ PRICE	7	8	9	÷ 4	RC MR	PD / VAT
3	8	13	18	23	28	—	OLD	4	5	6	X 3	# / NS	CHK
2	7	12	17	22	27	RF	NEW	1	2	3	− 2	SUB TOTAL	CR
1	6	11	16	21	26	ERR.CORR / CANCEL	NS	0	00	•	+ 1	CA / =	AMT TEND

MC-Service

Description:	Board No.	Drawing No.
LOCATION OF PRINTED CIRCUIT BOARD		E240461

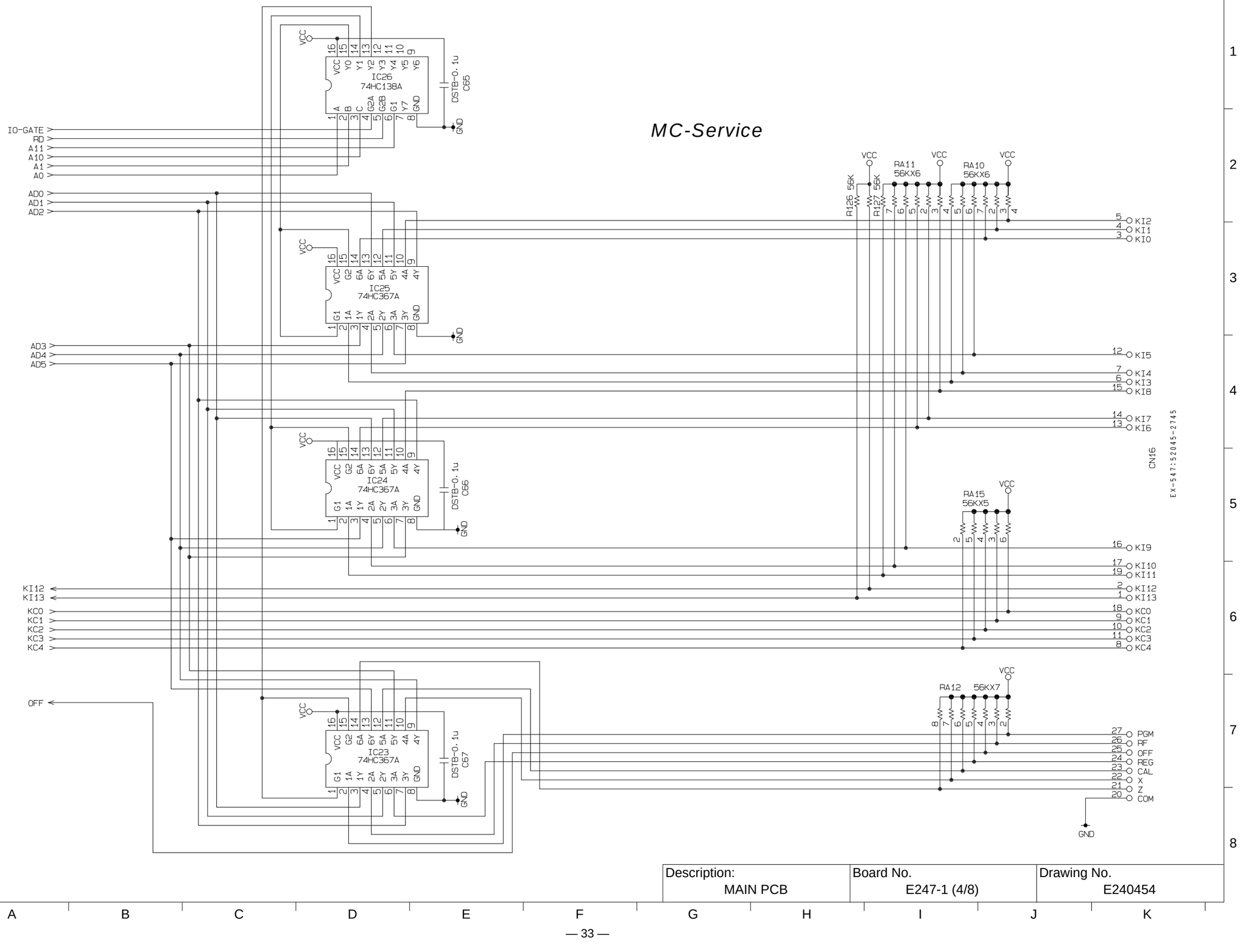

IC11
uPD78052GC-093-3B9
IC4 S-80719AN
IC16 S-80745AN
IC13 74HC373A
IC27 MAX232N
IC17 HC08A
IC18 HC00A
IC20 HC00A
IC21 HC00A
X1 C-002RX(M90-76)
X2 CST5.00MGW
RESET SW
CN8 B2B-EH
CN17 ID09P33E4GX2B
CA7 CNB8X101K
CA15 100PX8
CA17 100PX4
CA10 100PX8
CA8 100PX8
CA2 100PX8
RA1 2K
RA2 56KX8
RA7 56KX8
RA8 56KX8
RA9 56KX8
RA14 56K
D51 RB441Q
Q43 2SC1740S
Q42 DTC143ZSA
BZ1 PKM22EPT-2001
RESET
STAMP
DRW
DI
DO
CLK
STB
OFF
KI13
KI12
KC4
KC3
KC2
KC1
KC0
RP
DP
FD
MD
WD
HD.H
HD.G
HD.F
HD.E
HD.D
HD.C
HD.B
HD.A
RxD
TxD
DATA
ADDRESS
RD
WR
IOGATE
P.ROM
RAM
RAM.A14
RAM.A13
RAM.A12
EEPCE
:VDD
PAD condition
B.D.Bu
G
PAD1
Open
Short
PAD2
Short
Short
Description:
MAIN PCB
Board No.
E247-1 (1/8)
Drawing No.
E240451


CN3
52045-2445
TO E278-E2-1
IC2
uPD16312GB-3B4
C12
TFO.1u
C13
C5
R17
51K
R16
56K
220P
CA1
RA1
2.2K
100
D11
D15
D14
D13
D17
D29
D28
D27
D26
D25
D24
D23
D22
D21
D20
D10
D16
D12
D18
D19
1S2471
Sdp
Sg
Sf
Se
Sd
Sc
Sb
Sa
VF
G1
G2
G3
SW1
SW2
SW3
SW4
DOUT
DIN
VSS
CLK
STB
KEY1
KEY2
VCC
GND
PNES
DRW.S
DI
DO
CLK
STB
VF1
VF2
-VN
MC-Service
Description:
MAIN PCB
Board No.
E247-1 (2/8)
Drawing No.
E240452

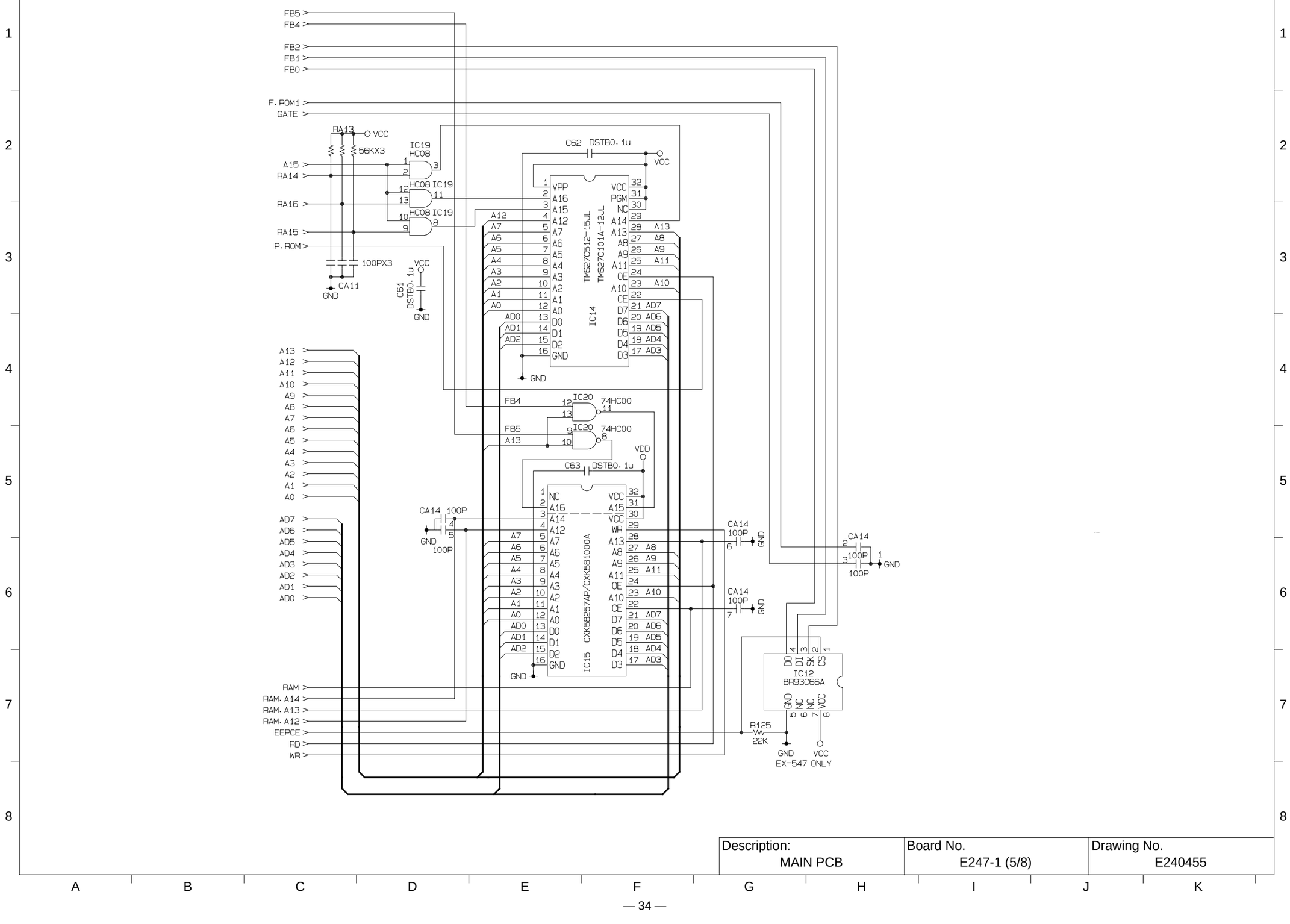


Description:	Board No.	Drawing No.
MAIN PCB	E247-1 (3/8)	E240453

MC-Service



Description:	Board No.	Drawing No.
MAIN PCB	E247-1 (4/8)	E240454

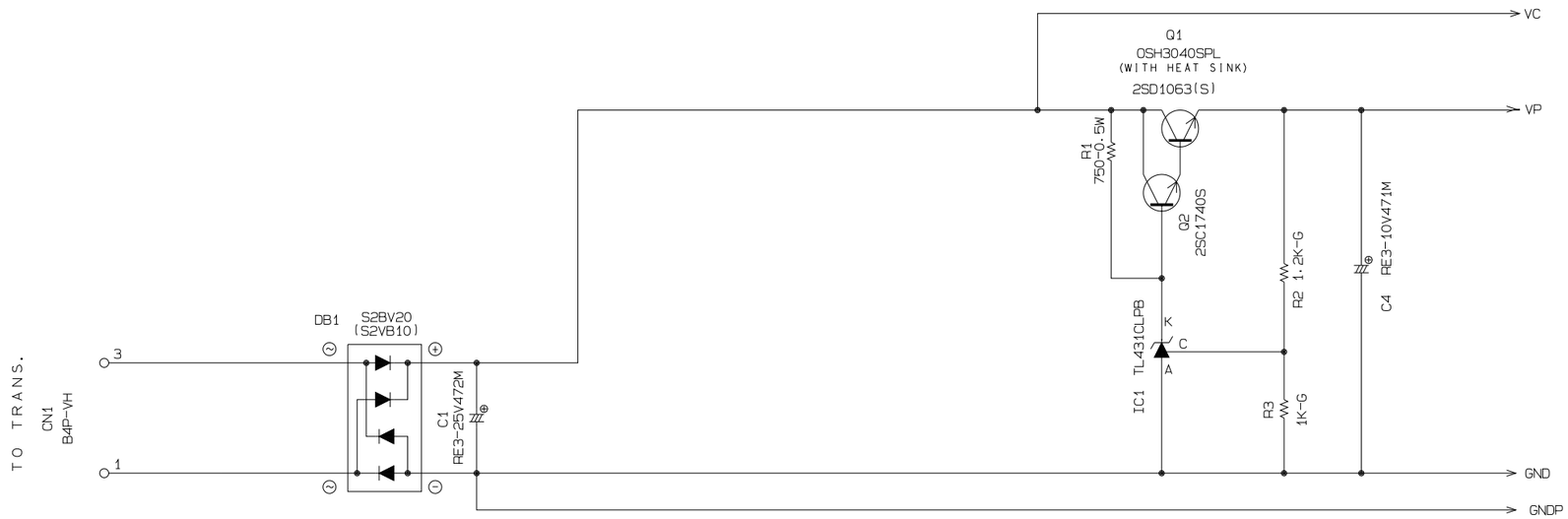


Description:	Board No.	Drawing No.
MAIN PCB	E247-1 (5/8)	E240455

MC-Service

Description:	Board No.	Drawing No.
MAIN PCB	E247-1 (6/8)	E240456

NOTE 1. WATAGE OF RESISTERS ARE 1/4 WATTS UNLESS OTHERWISE SPECIFIED.
NOTE 2. THE PARTS DOTTED LINE(— — —) ARE OPTIONS.



MC-Service

Description:	Board No.	Drawing No.
MAIN PCB	E247-1 (7/8)	E240457

SYMBLE No.	PARTS NAME
IC1	TL431CLPB
IC2	uPD16312GB-3B4
IC3	M5237L-T1
IC4	S-80719AN-Z
IC5	BA10393
IC6	S-80725AN-Z
IC7	TC74HC367AP
IC8	TC74HC245AP
IC9	TC74HC367AP
IC10	TC74HC367AP
IC11	uPD78052GC-093-3B9
IC12	BR93C66A
IC13	TC74HC373AP
IC14	TMS27C512-12/15JL
IC14	DILB28P-8JK
IC15	CXK58257AP-70/10L
IC16	S-80745AN-Z
IC17	TC74HC08AP
IC18	TC74HC00AP
IC19	TC74HC08AP
IC20	TC74HC00AP
IC21	TC74HC00AP
IC22	TC74HC32AP
IC23	TC74HC367AP
IC24	TC74HC367AP
IC25	TC74HC367AP
IC26	TC74HC138AP
IC27	MAX232N
C1	RE3-25V472M
C2	RT-HE60TKYB222K
C3	AMZV0050K1040200
C4	RE3-10V471M-T2
C5	AMZV0050K1040200
C6	RE3-35V471M-T2
C7	AMZV0050K1040200
C8	RT-HE40TKYB221K
C9	RT-HE40TKYB471K
C10	AMZV0050K1040200
C11	RE3-50V101M-T2
C12	AMZV0050K1040200
C13	AMZV0050K1040200
C14	RE3-16V22RM-T2
C15	RT-HE12TKYB103K
C16	RE3-16V22RM-T2
C17	RT-HE40TKYB101K
C18	RT-HE40TKYB101K
C19	AMZV0050K1040200
C20	RT-HE40TKYB101K
C21	RT-HE40TKYB101K
C22	RT-HE40TKYB101K
C23	RT-HE60TKYB222K
C24	RT-DSTB90TKYR104K
C25	AMZV0050K1040200
C26	RT-HE40TKYB101K
C27	RE3-10V471M-T2
C28	RE3-6.3V472M
C29	RT-HE40TKYB101K
C30	RT-HE12TKYB103K
C31	RT-HE40TKYB101K
C32	RT-HE40TKYB101K
C33	AMZV0050K1040200
C34	RT-DSTB90TKYR104K
C35	RT-DSTB90TKYR104K
C36	RE3-16V101M-T2
C37	RT-HE40TKYB221K
C38	RT-HE40TKCH120J
C39	RT-HE40TKCH150J
C40	RE2-10V470MMA-T2
C41	RT-DSTB90TKYR104K
C42	RT-DSTB90TKYR104K
C43	RT-DSTB90TKYR104K
C44	RT-DSTB90TKYR104K
C45	RE2-10V470MMA-T2
C46	RT-DSTB90TKYR104K
C47	AMZV0050K1040200
C48	RT-HE40TKYB101K

SYMBLE No.	PARTS NAME
C49	RT-HE40TKYB101K
C50	RT-HE40TKYB101K
C51	RT-HE40TKYB101K
C52	RT-HE12TKYB103K
C53	RT-HE40TKYB101K
C54	RT-HE40TKYB101K
C55	RE2-16V100MMA-T2
C56	RT-HE40TKYB101K
C57	RT-HE40TKYB101K
C58	RT-HE40TKYB101K
C59	RT-HE40TKYB101K
C60	RT-HE40TKYB101K
C61	RT-DSTB90TKYR104K
C62	RT-DSTB90TKYR104K
C63	RT-DSTB90TKYR104K
C64	RT-HE40TKYB101K
C65	RT-DSTB90TKYR104K
C66	RT-DSTB90TKYR104K
C67	RT-DSTB90TKYR104K
C68	RE2-50V010MMA-T2
C69	RE2-16V100MMA-T2
C70	RE2-50V010MMA-T2
C71	RE2-50V010MMA-T2
C72	RE2-50V010MMA-T2
C73	RT-HE40TKYB471K
R1	RD1/2WM2Y751J
R2	RD1/4WT-24Y122G
R3	RD1/4WT-24Y102G
R4	RSN2WMG151J
R5	RD1/2WM2Y101J
R6	RD1/4WT-24Y103J
R7	RD1/4WT-24Y201J
R8	RD1/4WT-24Y751J
R9	RD1/4WT-24Y103J
R10	RD1/4WT-24Y101J
R11	RD1/4WT-24Y103J
R12	RD1/4WT-24Y104J
R13	RD1/4WT-24Y223J
R14	RD1/4WT-24Y223J
R15	RD1/4WT-24Y101J
R16	RD1/4WT-24Y563J
R17	RD1/4WT-24Y513J
R18	RSN1WMG2R2J
R19	RD1/4WT-24Y101J
R20	RD1/4WT-24Y103J
R21	RD1/4WT-24Y103J
R22	RD1/4WT-24Y563J
R23	RD1/4WT-24Y103J
R24	RD1/4WT-24Y331J
R25	RD1/4WT-24Y242G
R26	RD1/4WT-24Y221J
R27	RD1/4WT-24Y103G
R28	RD1/4WT-24Y332J
R29	RD1/4WT-24Y102J
R30	RD1/4WT-24Y102J
R31	RD1/4WT-24Y301J
R32	RD1/4WT-24Y333J
R33	RD1/4WT-24Y472J
R34	RD1/4WT-24Y472J
R35	RD1/4WT-24Y822G
R36	RD1/4WT-24Y242G
R37	RD1/4WT-24Y222G
R38	RD1/4WT-24Y302J
R39	RD1/4WT-24Y152J
R40	RD1/4WT-24Y103G
R41	CRB20T24EFY2200
R42	CRB20T24EFY1200
R43	RD1/4WT-24Y101J
R44	RD1/4WT-24Y105J
R45	RD1/4WT-24Y105J
R46	RD1/4WT-24Y103J
R47	RD1/4WT-24Y472J
R48	RSN1WMG15RJ
R49	RD1/4WT-24Y102J
R50	RSN1WMG2R2J
R51	RD1/4WT-24Y222J
R52	RD1/4WT-24Y101J

SYMBLE No.	PARTS NAME
R53	RD1/4WT-24Y101J
R54	RD1/4WT-24Y101J
R55	RD1/4WT-24Y472J
R56	RD1/4WT-24Y101J
R57	RD1/4WT-24Y101J
R58	RD1/4WT-24Y101J
R59	RD1/4WT-24Y101J
R60	RD1/4WT-24Y101J
R61	RD1/4WT-24Y101J
R62	RD1/4WT-24Y102J
R63	RD1/4WT-24Y102J
R64	RD1/4WT-24Y102J
R65	RD1/4WT-24Y102J
R66	RD1/4WT-24Y102J
R67	RD1/4WT-24Y102J
R68	RD1/4WT-24Y102J
R69	RD1/4WT-24Y102J
R70	RD1/4WT-24Y101J
R71	RD1/4WT-24Y101J
R72	RD1/4WT-24Y101J
R73	RD1/4WT-24Y101J
R74	RD1/4WT-24Y101J
R75	RD1/4WT-24Y101J
R76	RD1/4WT-24Y101J
R77	RD1/4WT-24Y101J
R78	RD1/4WT-24Y101J
R79	RD1/4WT-24Y101J
R80	RD1/4WT-24Y101J
R81	RD1/4WT-24Y101J
R82	RD1/4WT-24Y101J
R83	RD1/4WT-24Y101J
R84	RD1/4WT-24Y101J
R85	RD1/4WT-24Y101J
R86	RD1/4WT-24Y103J
R87	RD1/4WT-24Y472J
R88	RD1/4WT-24Y103J
R89	RD1/4WT-24Y103J
R90	RD1/4WT-24Y334J
R91	RD1/4WT-24Y103J
R92	RD1/4WT-24Y684J
R93	RD1/4WT-24Y103J
R94	RD1/4WT-24Y101J
R95	RD1/4WT-24Y103J
R96	RD1/4WT-24Y103J
R97	RD1/4WT-24Y221J
R98	RD1/4WT-24Y103J
R99	RD1/4WT-24Y101J
R100	RD1/4WT-24Y101J
R101	RD1/4WT-24Y103J
R102	RD1/4WT-24Y103J
R103	RD1/4WT-24Y101J
R104	RD1/4WT-24Y101J
R105	RD1/4WT-24Y101J
R106	RD1/4WT-24Y103J
R107	RD1/4WT-24Y103J
R108	RD1/4WT-24Y101J
R109	RD1/4WT-24Y101J
R110	RD1/4WT-24Y103J
R111	RD1/4WT-24Y102J
R112	RD1/4WT-24Y102J
R113	RD1/4WT-24Y471J
R114	RD1/4WT-24Y103J
R115	RD1/4WT-24Y471J
R116	RD1/4WT-24Y102J
R117	RD1/4WT-24Y223J
R118	RD1/4WT-24Y102J
R119	RD1/4WT-24Y221J
R120	RD1/4WT-24Y103J
R121	RD1/4WT-24Y223J
R122	RD1/4WT-24Y563J
R123	RD1/4WT-24Y563J
R124	RD1/4WT-24Y563J
R125	RD1/4WT-24Y223J
R126	RD1/4WT-24Y563J
R127	RD1/4WT-24Y563J
R128	RD1/4WT-24Y101J
R129	RD1/4WT-24Y101J
R130	RD1/4WT-24Y101J
R131	RD1/4WT-24Y101J

SYMBLE No.	PARTS NAME
D1	1SR35-100AT-82
D2	1SR35-100AT-82
D3	1SR35-100AT-82
D4	1SR35-100AT-82
D5	1SR35-100AT-82
D6	1S2471-T-77-T
D7	1S2471-T-77-T
D8	1S2471-T-77-T
D9	1SS142-T-77
D10	1S2471-T-77-T
D11	1S2471-T-77-T
D12	1S2471-T-77-T
D13	1S2471-T-77-T
D14	1S2471-T-77-T
D15	1S2471-T-77-T
D16	1S2471-T-77-T
D17	1S2471-T-77-T
D18	1S2471-T-77-T
D19	1S2471-T-77-T
D20	1S2471-T-77-T
D21	1S2471-T-77-T
D22	1S2471-T-77-T
D23	1S2471-T-77-T
D24	1S2471-T-77-T
D25	1S2471-T-77-T
D26	1S2471-T-77-T
D27	1S2471-T-77-T
D28	1S2471-T-77-T
D29	1S2471-T-77-T
D30	RB100AT-32
D31	RB100AT-32
D32	1S2473T-77-T
D33	1S2473T-77-T
D34	RB441QT-77
D35	RB100AT-32
D36	RB100AT-32
D37	RB721Q-T-77
D38	1SR35-100AT-82
D39	1SR35-100AT-82
D40	1SR35-100AT-82
D41	1S2473T-77-T
D42	1S2473T-77-T
D43	1S2473T-77-T
D44	1S2473T-77-T
D45	1S2473T-77-T
D46	1S2473T-77-T
D47	1S2473T-77-T
D48	1S2473T-77-T
D49	1SR35-100AT-82
D50	1SR35-100AT-82
D51	RB441QT-77
ZD1	RD36EB1-T1
ZD2	RD5.6EB2-T1
ZD3	RD33EB1-T1
ZD4	RD4.7EB3
ZD5	RD6.8EB3-T1
ZD6	RD5.6EB2-T1
ZD7	RD5.6EB2-T1
ZD8	RD3.6EB2-T1
ZD9	RD20EB2-T1
ZD10	RD20EB2-T1
ZD11	RD20EB2-T1
ZD12	RD20EB2-T1
ZD13	RD20EB2-T1
ZD14	RD20EB2-T1
ZD15	RD20EB2-T1
ZD16	RD20EB2-T1

SYMBLE No.	PARTS NAME
Q1	2SD1063(R,S)
Q2	2SC1740S(QRSE)TP
Q3	2SD1804(T)
Q4	2SA933AS(QRS)TP
Q5	2SC1740S(QRSE)TP
Q6	2SB1240V2-Q,R
Q7	DTC143ZS-TP
Q8	DTC143ZS-TP
Q9	2SB1240V2-Q,R
Q10	DTA143ZS-TP
Q11	DTC143ZS-TP
Q12	2SA933AS(QRS)TP
Q13	2SC1740S(QRSE)TP
Q14	2SD1111-AA
Q15	2SD1853-AA
Q16	2SD1853-AA
Q17	DTA143ZS-TP
Q18	DTC143ZS-TP
Q19	2SC1740S(QRSE)TP
Q20	2SD965(P,Q,R)-TA
Q21	2SD965(P,Q,R)-TA
Q22	DTC143ZS-TP
Q23	2SD965(P,Q,R)-TA
Q24	DTC143ZS-TP
Q25	2SD965(P,Q,R)-TA
Q26	DTC143ZS-TP
Q27	2SD965(P,Q,R)-TA
Q28	DTC143ZS-TP
Q29	2SD965(P,Q,R)-TA
Q30	DTC143ZS-TP
Q31	2SD965(P,Q,R)-TA
Q32	DTC143ZS-TP
Q33	2SD965(P,Q,R)-TA
Q34	DTC143ZS-TP
Q35	2SD965(P,Q,R)-TA
Q36	DTC143ZS-TP
Q37	2SD965(P,Q,R)-TA
Q38	2SB926(T,U)-AA
Q39	2SC1740S(QRSE)TP
Q40	DTC143ZS-TP
Q41	DTC143ZS-TP
Q42	DTC143ZS-TP
Q43	2SC1740S(QRSE)TP
RA1	RGLD4X222J
RA2	RGLD6X563J
RA3	RGLD6X563J
RA4	RGLD8X563J
RA5	RGLD8X563J
RA6	RGLD6X563J
RA7	RGLD8X563J
RA8	RGLD8X563J
RA9	RGLD8X563J
RA10	RGLD6X563J
RA11	RGLD6X563J
RA12	RGLD8X563J
RA13	RGLD4X563J
RA14	RGLD4X563J
RA15	RGLD6X563J
RA16	RGLD4X563J
FB1	UJW-A
FB2	UJW-A
FB3	BL02RN2-R62-001
FB4	BL02RN2-R62-001
FT1	DSS310H-55B222M250

SYMBLE No.	PARTS NAME
CA1	CNB6X221K
CA2	CNB6X101K
CA3	CNB6X101K
CA4	CNB8X101K
CA5	CNB8X101K
CA6	CNB6X101K
CA7	CNB8X101K
CA8	CNB8X101K
CA9	CNB8X101K
CA10	CNB8X101K
CA11	CNB4X101K
CA12	CNB8X101K
CA13	CNB4X101K
CA14	CNB6X101K
CA15	CNB4X101K
CA16	CNB8X101K
CA17	CNB4X101K
CN1	B4P-VH
CN2	IL-G-3P-S3T2-E
CN3	52045-2445
CN4	B2B-PH-K-S
CN5	TID-X03P-B2
CN6	B3B-PH-K-S
CN7	B3B-PH-K-S
CN8	B2B-EH
CN9	B3B-EH
CN10	B14B-PH-K-S
CN11	B12B-PH-K-S
CN12	B11B-PH-K-S
CN13	B10B-EH
CN14	B7B-EH
CN15	TID-X02P-B2
CN16	52045-2545
CN17	IDO9P33E4GX28
CN17	E340524-1
DB1	S2VB20
SCR1	TF821M
F2	2181.00
F2	UF0033
F3	2383.15
F3	UF0033
F4	230.600
X1	C-002RX(M90-76)
X2	CST5.00MGW
DCS1	DCS-298
DCS2	PS10017
SW1	JPM1030-0201
Q1	OSH-3040-SPL
Q1	SILICON
Q1	3X12 ZMC-3
BZ1	PKM22EPT-2001
J1	UJW-D

SYMBLE No.	PARTS NAME
B-1~70	UJW-B
C-1~44	UJW-C
D-1~24	UJW-D
E-1~22	UJW-E
F-1~18	UJW-F
G-1~15	UJW-G
H-1~9	UJW-H
J-1~6	UJW-J
K-1~4	UJW-K
L-1~7	UJW-L

E297-E2-2

SYMBLE No.	PARTS NAME
CN1	52045-1245
CN2	52045-1045
DISP1	SH101MA

E247-CNB

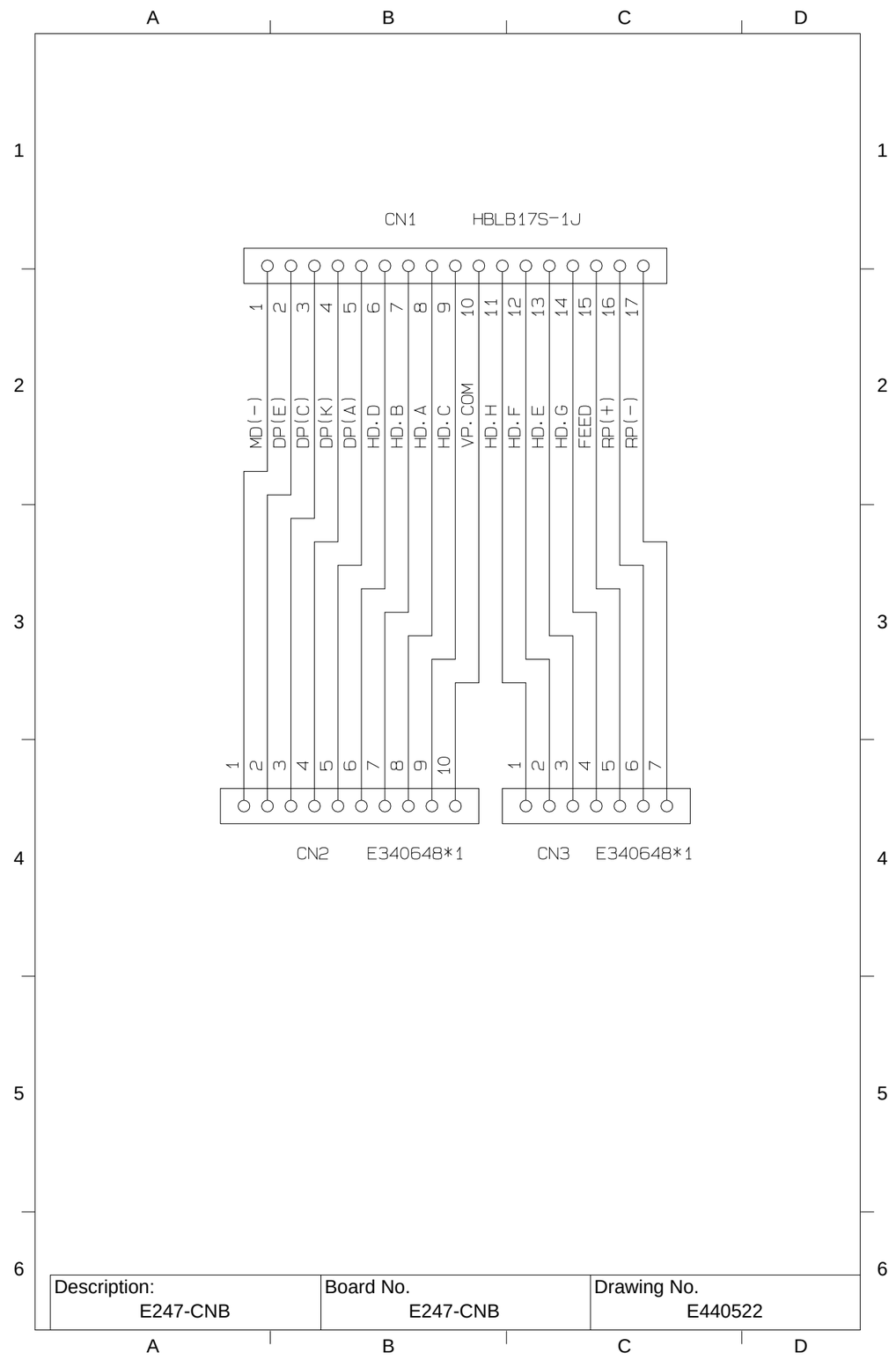
SYMBLE No.	PARTS NAME
CN1	HBLB17S-1J
CN2	E340648*1
CN3	E340648*1

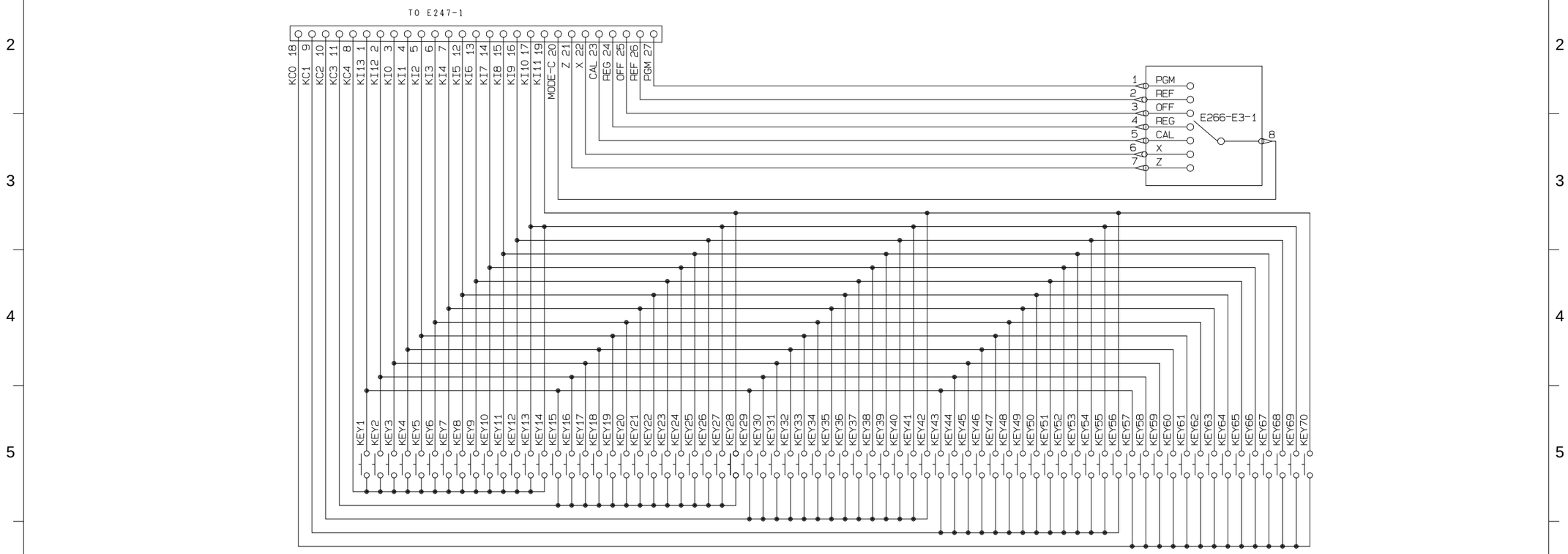
E547-SW

SYMBLE No.	PARTS NAME
SW1	JPM1030-0201
CN1	E440129*1

MC-Service

Description:	Board No.	Drawing No.
MAIN PCB	E247-1 (8/8)	E240458


A
B
C
D
1
2
3
4
5
6
CN1 HBLB17S-1J
1 MD(-)
2 DP(E)
3 DP(C)
4 DP(K)
5 DP(A)
6 HD.D
7 HD.B
8 HD.A
9 HD.C
10 VP.COM
11 HD.H
12 HD.F
13 HD.E
14 HD.G
15 FEED
16 RP(+)
17 RP(-)
CN2 E340648*1
1 2 3 4 5 6 7 8 9 10
CN3 E340648*1
1 2 3 4 5 6 7
Description: E247-CNB
Board No. E247-CNB
Drawing No. E440522

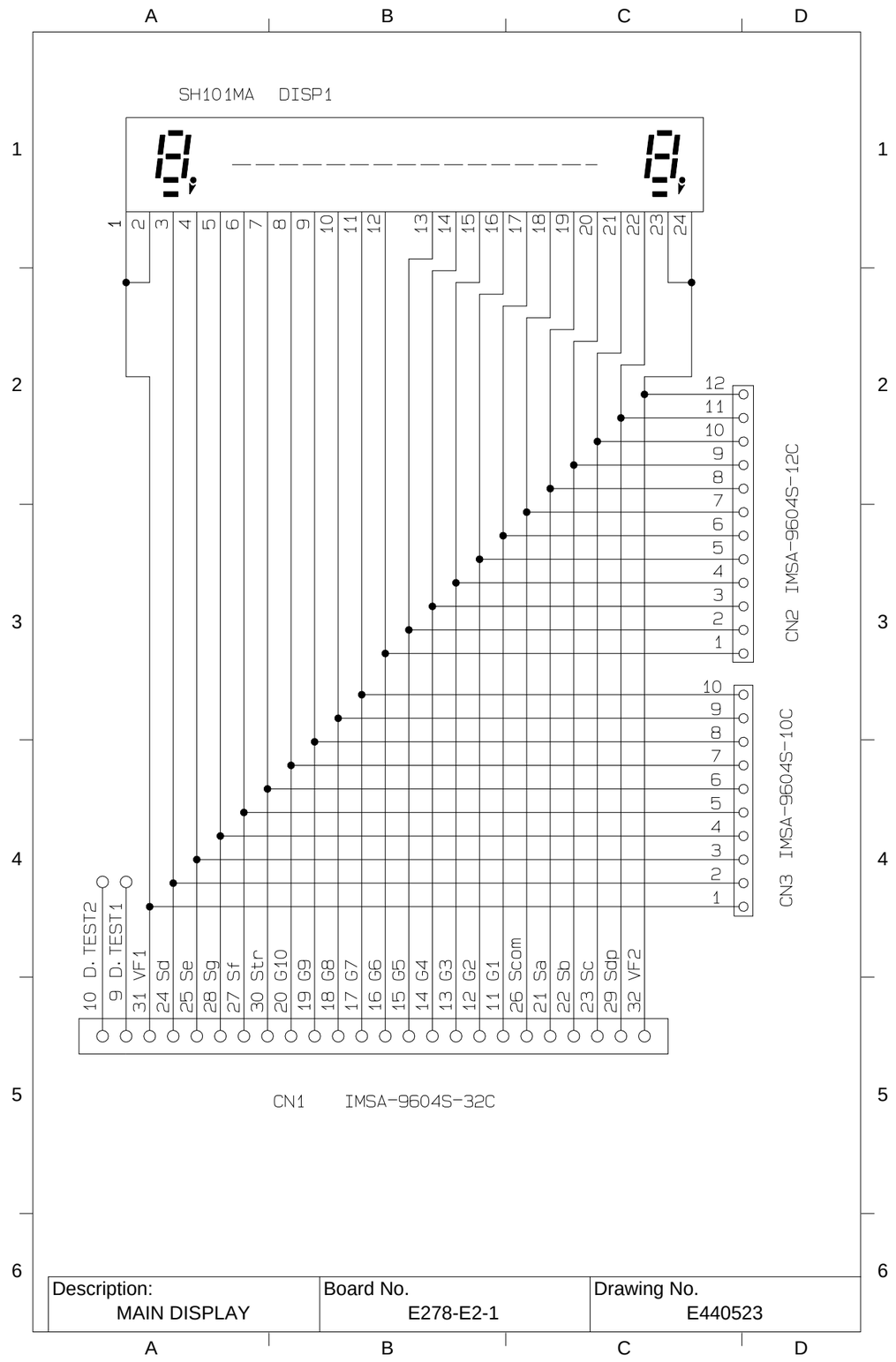


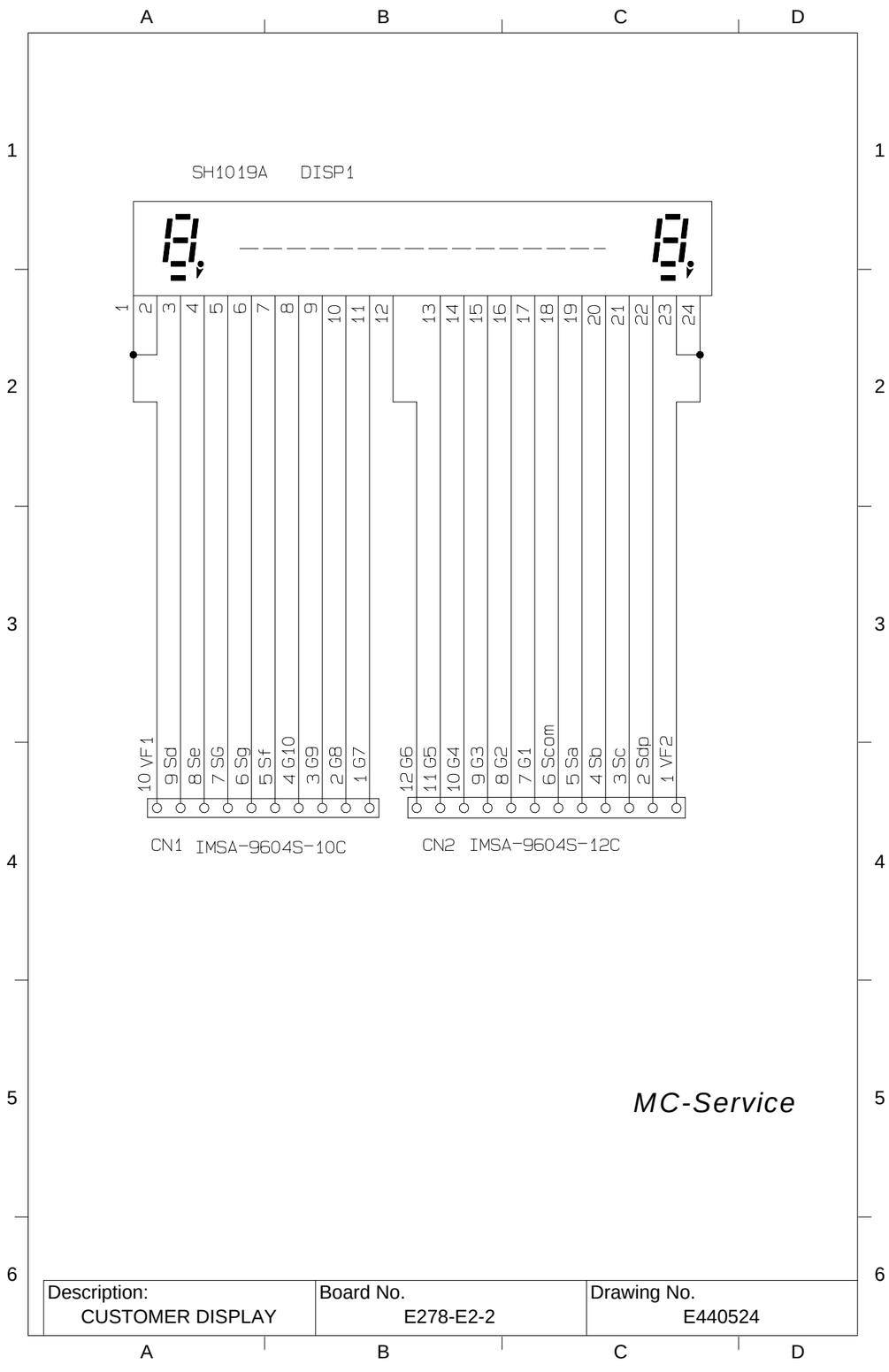
MC-Service

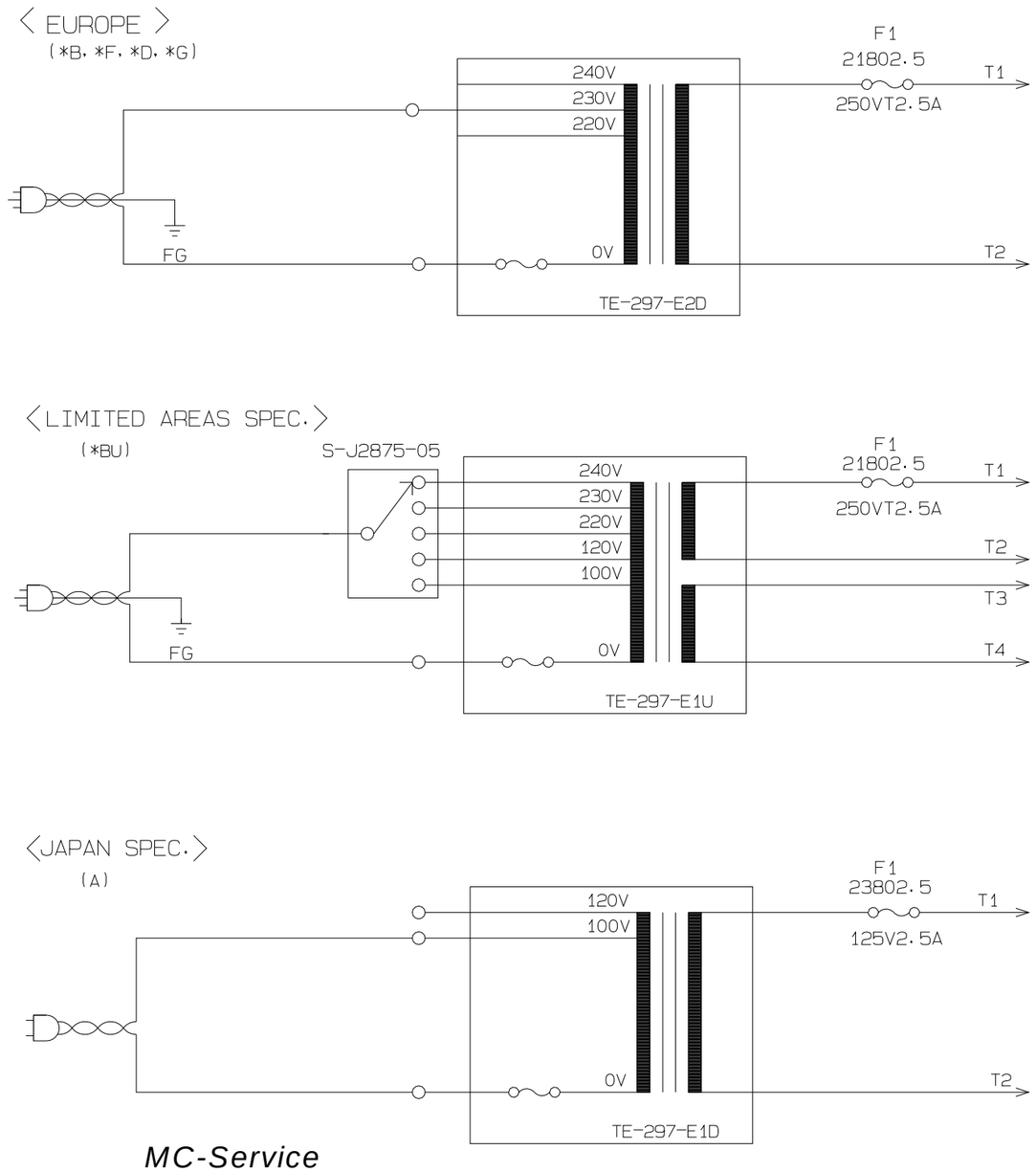
KEY CONTACT POSITION

57	58	59	60	61	62	63	64	65	66	67	68	69	70
43	44	45	46	47	48	49	50	51	52	53	54	55	56
29	30	31	32	33	34	35	36	37	38	39	40	41	42
15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	2	3	4	5	6	7	8	9	10	11	12	13	14

Description:	Board No.	Drawing No.
KEYBOARD		E240466

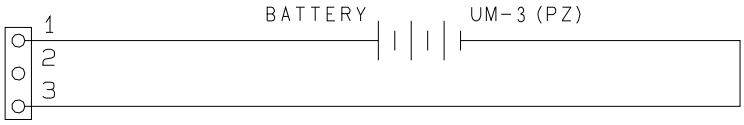

A
B
C
D
SH101MA DISP1
1
2
3
4
5
6
CN2 IMSA-9604S-12C
CN3 IMSA-9604S-10C
CN1 IMSA-9604S-32C
10 D.TEST2
9 D.TEST1
31 VF1
24 Sd
25 Se
28 Sg
27 Sf
30 Str
20 G10
19 G9
18 G8
17 G7
16 G6
15 G5
14 G4
13 G3
12 G2
11 G1
26 Scom
21 Sa
22 Sb
23 Sc
29 Sdp
32 VF2
Description:
MAIN DISPLAY
Board No.
E278-E2-1
Drawing No.
E440523


A
B
C
D
1
2
3
4
5
6
SH1019A DISP1
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
10 VF1
9 Sd
8 Se
7 SG
6 Sg
5 Sf
4 G10
3 G9
2 G8
1 G7
12 G6
11 G5
10 G4
9 G3
8 G2
7 G1
6 Scom
5 Sa
4 Sb
3 Sc
2 Sdp
1 VF2
CN1 IMSA-9604S-10C
CN2 IMSA-9604S-12C
MC-Service
Description:
CUSTOMER DISPLAY
Board No.
E278-E2-2
Drawing No.
E440524



MC-Service

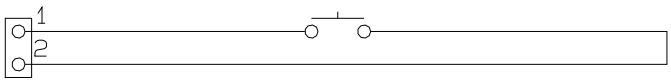
Description:	Board No.	Drawing No.
POWER SUPPLY CIRCUIT		E340639



Description:	Board No.	Drawing No.
BATTERY		E440526

SW1

RESET SW JPM1030-0201



MC-Service

Description:	Board No.	Drawing No.
RESET SW		E440527

11. PARTS LIST

1. Main PCB block E547-1 ass'y 47
2. Main display block E247-E2-1 51
3. Customer display block E247-E2-2 52
4. Button ass'y 52
5. Upper case ass'y 52
6. Lower case ass'y 52
7. Total component 52
8. Cash drawer ass'y 54
   - 8-1. DL-2763 (Europe/Other countries) 55
   - 8-2. DL-2764 (England/Germany) 55
9. Printer 56

Notes:

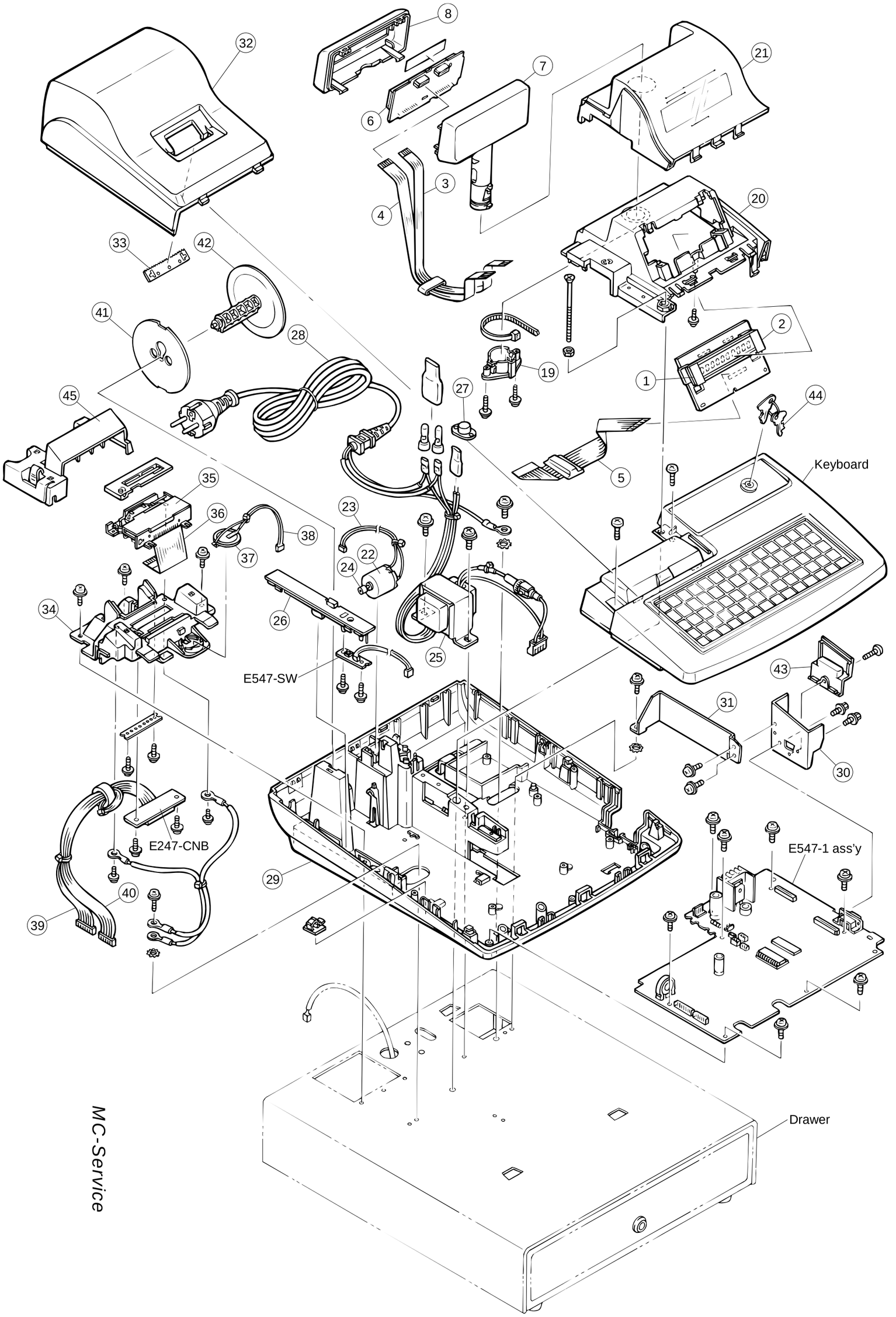
1. Prices and specifications are subject to change without notice.
2. As for order / supply of spare parts, refer to the "GUIDEBOOK for Spare Parts Supply", a separate publication.
3. The numbers in item column correspond to the same numbers in drawing.
4. MARKS:

   Q: Quantity used per unit

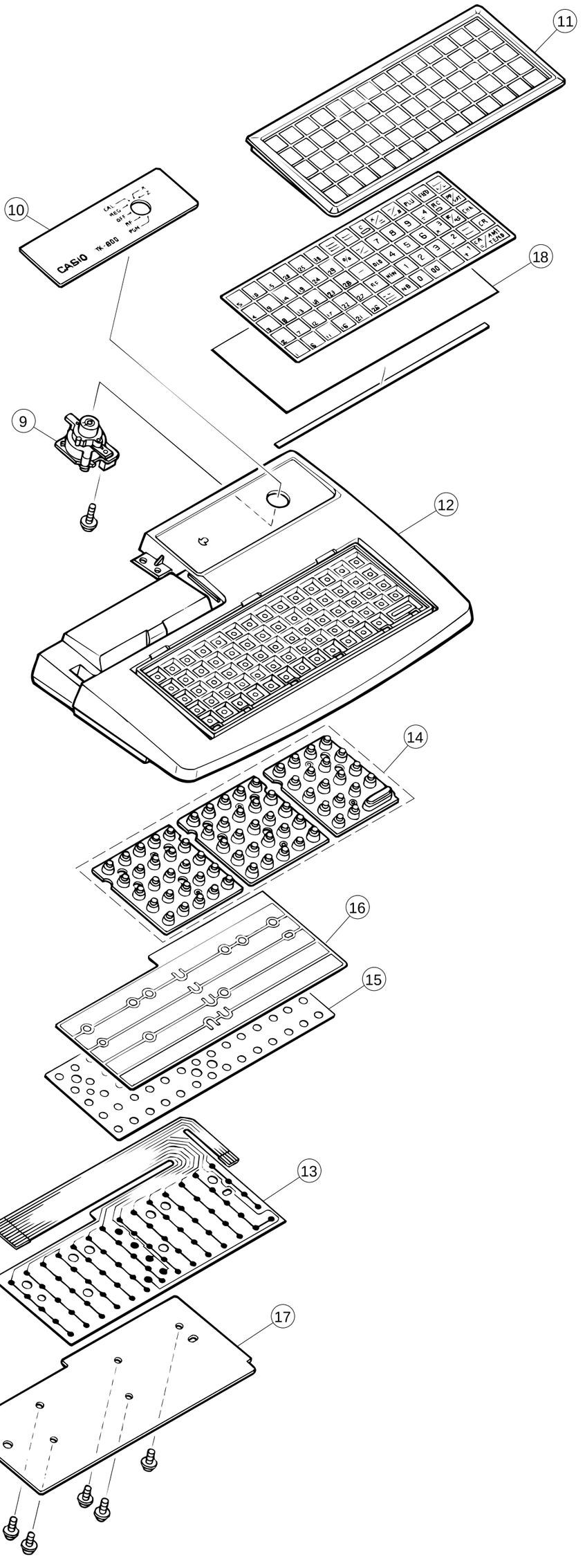
   R: Rank

   A: Essential
   B: Stock recommended
   C: Less recommended
   X: No stock recommended

Exploded Diagram



Keyboard Block



Item	Code No.	Parts Name	Specification	Version	Q	R
	1. Main PCB block E547-1 ass'y					
	6193 4617	Main PCB ass'y E547-1	E240426*3		1	A
IC12	2006 1109	EEPROM	BR93LC66A		1	A
IC14	2006 1354	LSI	TMS27C512-12/15JL		1	A
IC15	2006 1319	RAM	CXK58257AP-70/10L		1	A
IC2	2006 1326	LSI	UPD16312GB-3B4		1	A
IC11	2006 1655	LSI	UPD78052GC-093-3B9		1	A
IC26	2101 0189	MOS IC	TC74HC138AP		1	A
IC18,20-21	2105 1008	C-MOS IC	TC74HC00AP		3	A
IC13	2105 1169	C-MOS IC	TC74HC373AP		1	A
IC17,19	2105 1218	C-MOS IC	TC74HC08AP		2	A
IC23-25	2112 0035	MOS IC	TC74HC367AP		3	A
IC27	2112 0329	Bipolar IC	MAX232N		1	A
IC4	2112 0336	Reset IC	S-80719AN-Z		1	A
IC16	2112 0406	Reset IC	S-80745AN-Z		1	A
IC1	2120 7349	Regulator IC	TL431CLPB		1	A
Q38	2210 7186	Transistor	2SB926(T,U)-AA		1	B
Q14	2230 3902	Transistor	2SD1111-AA		1	B
Q15	2230 4135	Transistor	2SD1853-AA		1	B
Q20-21,23, Q25,27,29, Q31,33,35, Q37	2230 5261	Transistor	2SD965(P.Q.R)-TA		10	B
Q18,22,24, Q26,28,30, Q32,34,36, Q40-42	2250 0847	Digital transistor	DTC143ZS-TP		12	B
Q3	2250 1309	Transistor	2SD1804(T)		1	B
Q4	2250 1323	Transistor	2SA933AS(QRS)TP		1	B
Q2,5,19, Q39,43	2250 1330	Transistor	2SC1740S(QRSE)TP		5	B
Q1	2250 1554	Transistor	2SD1063(R,S)		1	B
DB1	2315 2857	Diode stack	S2VB20		1	B
ZD1	2315 2661	Zener diode	RD36EB1-T1		1	B
ZD9-16	2315 2836	Zener diode	RD20EB2-T1		8	B
ZD4	2315 3025	Zener diode	RD4.7EB3-T1		1	B
ZD2	2315 3109	Zener diode	RD5.6EB2-T1		1	B
ZD3	2315 3112	Zener diode	RD33EB1-T1		1	B
D35,36	2390 0882	Schottky barrier diode	RB100AT-32		2	B
D34,51	2390 1967	Diode	RB441QT-77		2	B
D6-8,10-29	2301 0046	Diode	1S2471 T-77-T		23	B
D9	2315 2619	Diode	1SS142-T-77-T		1	B
D38,40, D49,50	2315 2682	Diode	1SR35-100A-T-82		4	B
D37	2315 2864	Diode	RB721Q-T-77		1	B
X2	2408 8261	Ceramic oscillator	CST5.00MGW		1	B
X1	2520 3445	Crystal oscillator	C-002RX(M90-76)		1	B
R51		Carbon film resistor	CR-25-2.2KOHMJ-T		1	X

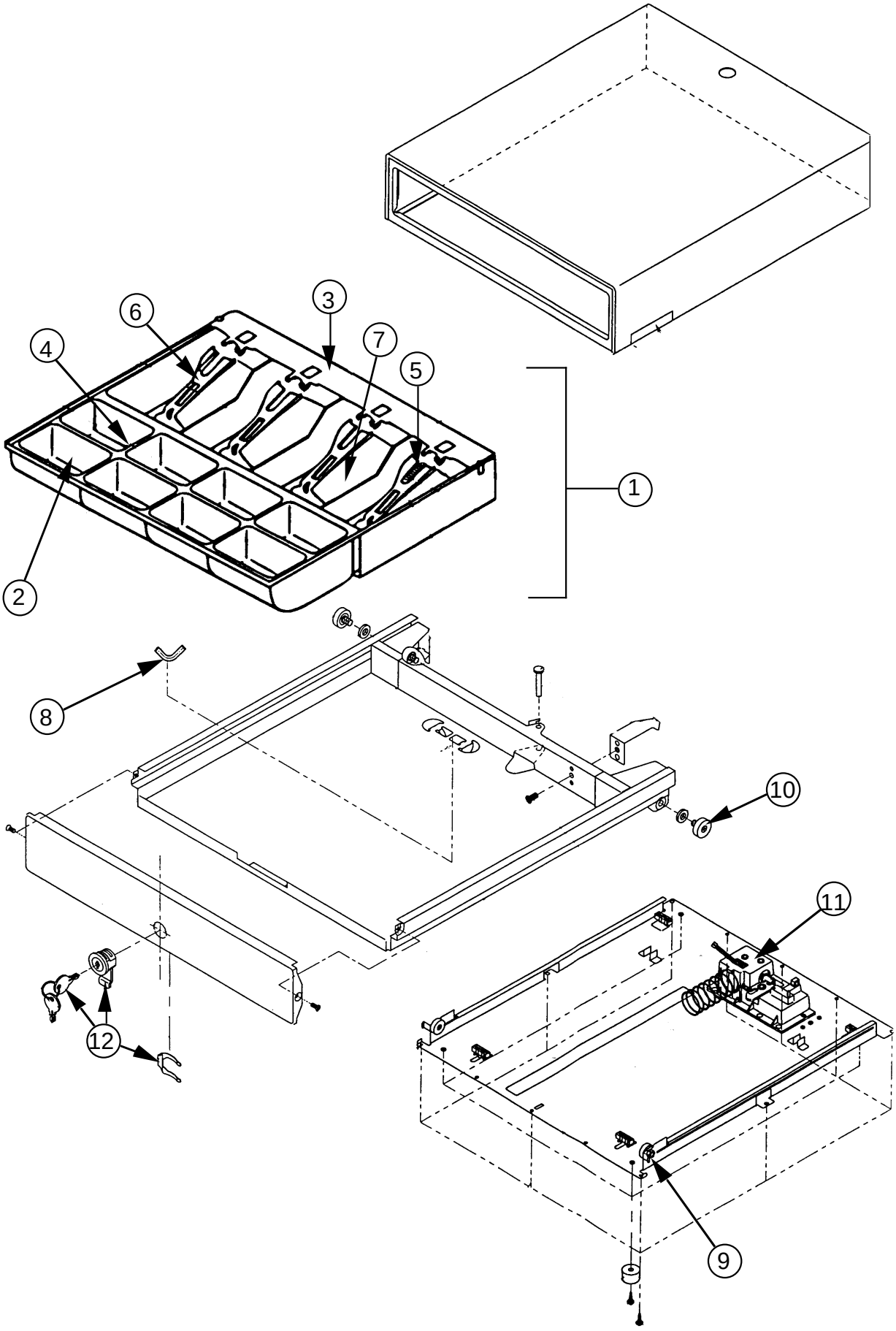
Item	Code No.	Parts Name	Specification	Version	Q	R
R7		Carbon film resistor	CR-25-200OHMJ-T		1	X
R10,19,43, R52-54, R84,85,94, R99-100, R103-105, R108-109, R128-131		Carbon film resistor	CR-25-100OHMJ-T		20	X
R49,86,111, R112,116, R118		Carbon film resistor	CR-25-1KOHMJ-T		6	X
R33,47,87		Carbon film resistor	CR-25-4.7KOHMJ-T		3	X
R6,9,11, R21,46,88, R89,93,95, R96,98,101, R102,106, R107,110, R114,120		Carbon film resistor	CR-25-10KOHMJ-T		18	X
R16,122, R124,126, R127		Carbon film resistor	CR-25-56KOHMJ-T		5	X
R90		Carbon film resistor	CR-25-330KOHMJ-T		1	X
R97,119		Carbon film resistor	CR-25-220OHM-J-T		2	X
R28		Carbon film resistor	CR-25-3.3KOHM-J-T		1	X
R13-14,117, R121,125		Carbon film resistor	CR-25-22KOHM-J-T		5	X
R44		Carbon film resistor	RD1/4WT-24Y105J		1	X
R17		Carbon film resistor	RD1/4ET-24Y513J		1	X
R8		Carbon film resistor	RD1/4WT-24Y751J		1	X
R1		Carbon film resistor	R-50XT-24J751		1	X
R2		Carbon film resistor	RD1/4WT-24Y122G		1	X
R3		Carbon film resistor	RD1/4WT-24Y102G		1	X
R113,115		Carbon film resistor	CR-25-470-OHMJ-T		2	X
R92		Carbon film resistor	CR-25-680K-OHM-J-T		1	X
R5		Carbon film resistor	R-50XT-24J101		1	X
R42		Metal film resistor	CRB20T24EFY1200		1	X
R41		Metal film resistor	CRB20T24EFY2200		1	X
R48		Metal film resistor	CRH100-FH11J-15R		1	X
R18		Metal film resistor	CRH100-F11J-2R2		1	X
R45		Carbon film resistor	R-25-100K-J-T24-T		1	X
RA7-9,12		Module resistor	RGLD8X563J		4	X
RA1		Module resistor	RGLD4X222J		1	X
RA13-14,16		Module resistor	RGLD4X563J		3	X
RA2,10,11, RA15		Module resistor	RGLD6X563J		4	X
C4,27		Electrolytic capacitor	RE3-10V471M-T2		2	X
C1		Electrolytic capacitor	RE3-25V472M		1	X
C36		Electrolytic capacitor	RE3-16V101M-T2		1	X
C55,69		Electrolytic capacitor	RE2-16V100MMA-T2		2	X
C68,70-72		Electrolytic capacitor	RE2-50V010MMA-T2		4	X
C40,45		Electrolytic capacitor	RE2-10V470MMA-T2		2	X
C2,23		Ceramic capacitor	RT-HE60TKYB222K		2	X

Item	Code No.	Parts Name	Specification	Version	Q	R
C30,52		Ceramic capacitor	RT-HE12TKYB103K		2	X
C11		Electrolytic capacitor	RE2-50V101M-T2		1	X
C28		Electrolytic capacitor	RE3-6.3V472M		1	X
C17-18,26, C29,31-32, C48-51, C53-54, C56-60,64		Ceramic capacitor	RT-HE40TKYB101K		18	X
C9		Ceramic capacitor	RT-HE40TKYB471K		1	X
C24,35,41, C42,46, C61-63, C65-67		Ceramic capacitor	RT-DSTB90TKYR104K		11	X
C38		Ceramic capacitor	RT-HE40TKCH120J		1	X
C39		Ceramic capacitor	RT-HE40TKCH150J		1	X
C5,12,13, C25,47		Film capacitor	AMZV0050K1040200		5	X
C8,37		CERAMIC DISC CAP	RT-HE40TKYB221K		2	X
CA1		Module capacitor	CNB6X221K		1	X
CA7-10,12		Module capacitor	CNB8X101K		5	X
CA2,14		Module capacitor	CNB6X101K		2	X
CA11,13,15, CA17		Module capacitor	CNB4X101K		4	X
CA16		Module capacitor	CGSD8X101M		1	X
DCS1	3000 7623	DC/DC transformer	DCS-298		1	A
F4	3000 7777	Fuse	230.600		1	A
BZ1	3240 2089	Buzzer	PKM22EPT-2001		1	C
CN2	3500 3355	Pin ass'y 3P	IL-G-3P-S3T2-E		1	C
CN6,7	3500 5845	PCB connector	B3B-PH-K-S		2	C
CN4	3501 6244	Connector	B2B-PH-K-S		1	C
CN13	3540 3934	Connector	B10B-EH		1	C
CN3	3501 5404	FFC connector	52045-2445		1	C
CN16	3540 5165	Connector	52045-2745		1	C
CN17	3540 5172	Connector	ID09P33E4GX28		1	C
CN8	3580 0692	Connector	B2B-EH		1	C
CN14	3580 0693	Connector	B7B-EH		1	C
CN1	3580 2371	Connector	B4P-VH		1	C
IC14	3635 0024	IC socket	DILB28P-8JK		1	X
		PCB-E247-1	E140198-1		1	X
IC15	3610 6859	IC socket	DILB32P-JK		1	X
Q1		Screw	3X12 ZMC-3		1	X
Q1		Heatsink	OSH-3040-SPL		1	X
FT1		EMI filter	DSS310H-55B222M250		1	X
FB3,4		Ferrite beads	BL02RN2-R62-001		2	X
	2. Main display block E247-E2-1					
DISP1	2408 8226	Display tube	SH101MA		1	A
	3000 8040	Ferrite core	SSC-40-12		1	X
CN1	3501 5404	FFC connector	52045-2445		1	B
CN3	3540 4906	PCB connector	52045-1045		1	C
CN2	3540 4913	PCB connector	52045-1245		1	C
1	6246 4260	Display cushion A	E412177-1		2	X

Item	Code No.	Parts Name	Specification	Version	Q	R
2	6246 4270	Display spacer	E412178-1		2	X
3	6246 4290	FFC joiner B (12P)	E412175-2		1	B
4	6246 4300	FFC joiner C (10P)	E412175-3		1	B
5	6248 0508	FFC joiner A (23P)	E440442-1		1	B
	4308 1298	PCB-E278-E2	E240025A-1		1	X
	3. Customer display block E247-E2-2					
DISP2	2408 8233	Display tube	SH1019A		1	A
CN1	3540 4906	PCB connector	52045-1045		1	C
CN2	3540 4913	PCB connector	52045-1245		1	C
2	6246 4270	Display spacer	E412178-1		2	X
6	6246 4310	Display cushion B	E412177-2		2	X
7	6247 6469	Customer display case	E240325-1		1	C
8	6248 0515	Rear display panel	E240326-4		1	C
	4. Button ass'y					
9	6192 4970	Mode key switch ass'y	E311944*1		1	B
10	6248 0732	Mode key plate	E440460-4		1	C
11	6247 9724	Sheet cover	E240400-1		1	C
12	6248 0417	Button frame	E140173-1		1	X
13	6248 0424	FPC	E240397-1		1	A
14	6248 0431	Key contact rubber	E240398-1		1	A
15	6248 0438	Spacer	E340513-1		1	C
16	6248 0445	Common sheet	E340514-1		1	A
17	6248 0452	Keyboard chassis	E340515-1		1	X
18	6248 0459	Stopper sheet	E340518-1		1	C
		Screw with washer	3X6 ZMC-3		7	X
	5. Upper case ass'y					
19	6220 2505	Display bush E231	E310377-1		1	X
20	6247 6455	Upper case E245	E140123-1		1	C
21	6248 0731	Display case E547B	E140124-6		1	C
		Screw with washer	3X20 ZMC-3		2	X
	6. Lower case ass'y					
22	3200 3672	Motor	MXN-13FB12F		1	B
23	6191 0112	Motor connector ass'y	E311086*1		1	C
24	6231 6837	Winder rubber E222	E410716A-1		1	B
25	3000 8001	Transformer	TE-297-E1U	Other countries	1	A
25	3000 8036	Transformer	TE-297-E2D	UK, Europe	1	A
26	6248 0466	Battery filer E547	E240402-1		1	C
27	3600 1046	Voltage selector	S-J2875-05	Other countries	1	C
28	3701 0242	Power cord	MP5004	UK, Other countries	1	C
28	3700 4283	Power cord	M3203	Other countries	1	C
28	3700 4281	Power cord	PS204	Other countries	1	C
28	6221 4802	Power cord	M2511	Germany, Europe	1	C
29	6248 0396	Lower case E247	E140118-4		1	C
30	6248 0873	Connector fixing plate	E340524-1		1	X
31	6248 0779	FG plate	E340646-1		1	X
		Screw	3X6 ZMC-3		2	X
		Screw with washer	3X8 ZMC-3		7	X
		Tapping screw with washer	4X8 ZMC-3		1	X
		Insert nut	SB-3001		1	X
		Screw with washer	3X8 ZMC-3		2	X
	7. Total Component					
32	6247 6483	Printer cover	E140120-1		1	C
33	6231 3668	Paper cutter	E42592A-1		1	C
		Printer fixing stand block				
34	6248 0403	Printer fixing stand	E140174-1		1	C

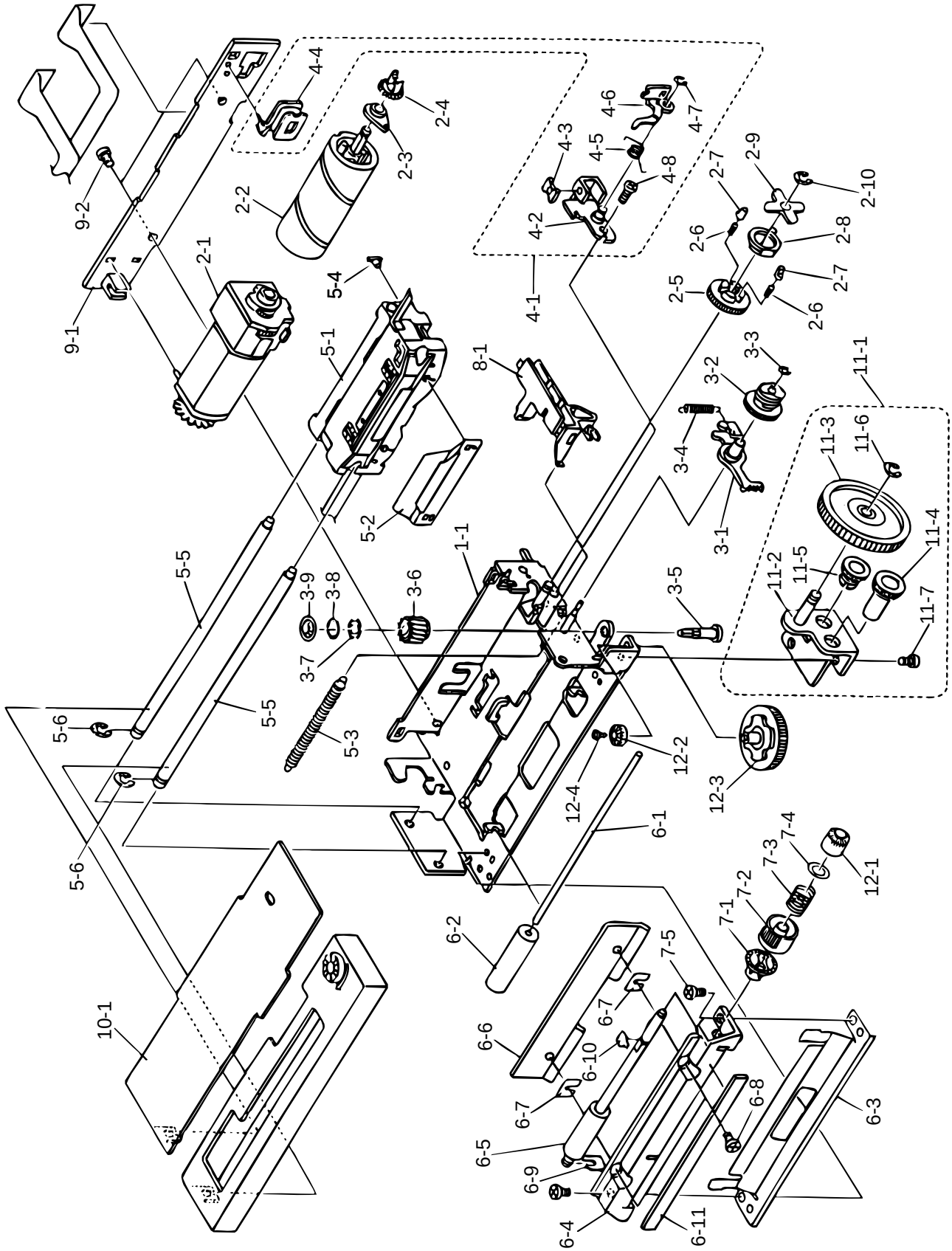
Item	Code No.	Parts Name	Specification	Version	Q	R
		Screw with washers	2X6 ZMC-3		2	X
		FG wire sub ass'y	E340653*1		1	X
		Screw with washer	3X8 ZMC-3		4	X
35	1090 5525	Printer unit	MD910SSC		1	A
36	6248 0704	FFC joiner F-E247	E440443-2		1	A
		Lithium battery block				
37	3000 6692	Lithium battery	VL3032/1F2		1	A
38	6248 0886	Connector sub ass'y	E340619*1		1	C
		E547-SW PCB				
SW1	3000 7189	MT switch	JPM1030-0201		1	C
CN1	6246 8272	Connector sub ass'y	E440129*1		1	C
		E247-CNB board				
CN1	3510 7525	PCB connector	HBLB17S-1J		1	C
	3637 5230	Ferrite core	TR-25-15-12		1	X
39	6248 0893	Connector sub ass'y (10P)	E340635*1		1	C
40	6248 0894	Connector sub ass'y (7P)	E340636*1		1	C
41	6221 4029	Paper holding spool E227	E411393-1		1	C
42	6246 1830	Wind pulley E266	E311860-1		1	C
43	6248 0872	Connector cover E247	E340523-1		1	C
44	6248 0910	Key set sub ass'y	E312046A*2		1	A
45	6248 0298	Ribbon cover	E140175-1		1	C
	6247 8562	Dust cover E245	E240392-1		1	C
	6248 0326	MENU sheet	E240419-2		1	X
		Tapping screw with washer	4X8 ZMC-3		2	X
		Tapping screw with washer	3X8 ZMC-3		5	X
		Screw with washer	3X8 ZMC-3		1	X
		Bind screw	3X8 NI		2	X
		Screw with toothed lock washer	4 ZMC-3		5	X
		Flat screw	4X85 ZMC-3		1	X
		Flat washer	4X9X0.8 ZMC-3		1	X
		Ferrite core	TR-18-10-6		1	X

8. Cash drawer ass'y (DL-2763/2764)



Item	Code No.	Parts Name	Specification	Version	Q	R
8. Cash drawer ass'y						
8-1. Cash drawer (DL-2763) for Europe/Other countries						
	6247 9752	Cash drawer (DL-2763)	E440128A*14		1	C
1	6192 7953	Bill/Coin case ass'y	E140034*3		1	C
2	6247 3935	Coin case	E140058-1		1	B
3	6246 5230	Bill holder fixing plate	E211620-1		1	C
4	6247 3949	Coin separeter	E340173-1		6	B
5	6246 5220	Bill holder spring	E412160-1		4	A
6	6221 4902	Bill holder	ZD18931		4	A
7	6221 4911	Partition plate	ZD43652		3	B
8	6246 5030	Earth spring	E412092-1		1	C
9	5150 1643	Nut	6...		2	X
10	5500 0619	Roller	DR-19B1		4	A
11	6193 4567	Lock ass'y	E211680*9		1	B
12	6221 4900	Cylinder lock	ZD20025		1	C
8-2. Cash drawer (DL-2764) for England/Germany						
	6247 9759	Cash drawer (DL-2764)	E440128A*15		1	C
1	6192 7953	Bill/Coin case ass'y	E140034*3		1	C
2	6247 3935	Coin case	E140058-1		1	B
3	6246 5230	Bill holder fixing plate	E211620-1		1	C
4	6247 3949	Coin separeter	E340173-1		6	B
5	6246 5220	Bill holder spring	E412160-1		4	A
6	6221 4902	Bill holder	ZD18931		4	A
7	6221 4911	Partition plate	ZD43652		3	B
8	6246 5030	Earth spring	E412092-1		1	C
9	5150 1643	Nut	6...		2	X
10	5500 0619	Roller	DR-19B1		4	A
11	6193 4568	Lock ass'y	E211680*10		1	B
12	6221 4900	Cylinder lock	ZD20025		1	C

9. Printer (MD-910)



MD-910

N	Item	Code No.	Parts Name	Specification	Q	R
	1-1	1904 7581	Frame	NC44701-07	1	X
	2-1	1904 7582	Gear box sub ass'y	NC10701-00	1	A
	2-10,5-6	1906 2087	E-Ring,2	E60320-00	3	X
	2-2	1904 7583	Cylinder cam	NC19701-00	1	X
	2-3	1904 7584	Bushing for cam shaft	NC21201-01	1	X
	2-4	1904 7585	Paper feeding gear	NC20201-02	1	B
	2-5	1904 7586	Gear for paper feed cam	NC20202-03	1	B
	2-6	1904 7587	Spring for cutter pin	NC23602-01	2	X
	2-7	1904 7588	Pin for cotter(PLS)	NC29202-02	2	X
	2-8	1904 7589	Ring for return	NC29203-01	1	X
	2-9	1904 7590	Cam	NC29201-03	1	X
	3-1	1904 7591	Sector gear	NC20701-01	1	X
	3-2	1904 7592	Worm	NC30201-01	1	X
	3-3	1904 7593	E-Ring, 1.2	E60312-00	1	X
	3-4	1904 7594	Spring for sector gear	NC23603-03	1	X
	3-5	1904 7595	Pin for ribbon drive	NC32201-01	1	X
	3-6	1904 7596	Gear for worm	NC30202-00	1	B
	3-7	1904 7597	Latch for ribbon drive	NC33101-01	1	X
	3-8	1904 7598	Spacer for latch	NC39101-01	1	X
	3-9	1904 7599	Nut	E40520-00	1	X
	4-1	1904 7600	PF solenoid	NC25704-00	1	B
	4-2	1904 7601	Core base	NC25702-02	1	X
	4-3	1904 7602	Core for PF solenoid	NC25102-01	1	X
	4-4	1904 7603	Bobbin	NC25701-00	1	X
	4-5	1904 7604	Spring for armature	NC25601-02	1	X
	4-6	1904 7605	Armature	NC25703-00	1	X
	4-7	1904 7593	E-Ring, 1.2	E60312-00	1	X
	4-8, 9-2	1904 7607	Screw M2x2.5	E01420-025	2	X
	5-1	1904 7608	Head	NC09701-05	1	A
	5-2	1904 7609	Ribbon mask	NC14102-05	1	A
	5-3	1904 7610	Spring for head return	NC13601-01	1	B
	5-4	1904 7611	Pin for shaft	NC12001-02	1	X
	5-5	1904 7612	Shaft for carrige guide	NC02001-03	2	X
	6-1	1904 7613	Shaft for pressure roller	NC22003-01	1	X
	6-10	1904 7614	Spring for brake	NC23102-02	1	X
	6-11	1904 7615	Damper for platen	NC04102-03	1	X
	6-2	1904 7616	Pressure roller	NC22201-03	1	B
	6-3	1904 7617	Guide for paper pressure	NC23101-02	1	C
	6-4	1904 7618	Bracket for paper feed	NC24201-06	1	X
	6-5	1904 7619	Paper feed roller	NC22501-09	1	C
	6-6	1904 7620	Platen	NC04101-02	1	C
	6-7	1904 7621	Spacer for platen (0.10)	NC04103-00	2	X
	6-7	1904 7622	Spacer for platen (0.05)	NC04103-10	2	X
	6-8	1904 7607	Screw M2x2.5	E01420-025	2	X
	6-9	1904 7624	Bushing for PF bracket	NC21101-05	1	X
	7-1	1904 7625	Wheel for clutch	NC20204-03	1	B
	7-2	1904 7626	Gear for clutch	NC20203-04	1	B
	7-3	1904 7627	Spring for PF clutch	NC23601-02	1	B
	7-4	1904 7628	Spacer for clutch	NC29102-00	1	X
	7-5, 11-7	1904 7607	Screw M2x2.5	E01420-025	2	X
	8-1	1904 7630	RP switch	NC68701-00	1	A
	9-1	1904 7631	PCB terminal	NC66702-00	1	C
	10-1	1904 7632	Cover	NC44102-01	1	C
	11-1	1904 7633	Vertical manual knob	NC29701-00	1	C
	11-2	1904 7634	Bracket (V)	NC29702-01	1	X

N	Item	Code No.	Parts Name	Specification	Q	R
	11-3	1904 7635	Knob	NC20208-01	1	X
	11-4	1904 7636	Gear for PF drive	NC20209-01	1	B
	11-5	1904 7637	Gear for idler	NC20210-00	1	B
	11-6	1906 2087	E-Ring, 2	E60320-00	1	X
	12-1	1904 7638	Gear A for knob	NC20205-01	1	B
	12-2	1904 7639	Gear B for knob	NC20206-03	1	B
	12-3	1904 7640	Knob	NC20901-05	1	B
	12-4	1904 7641	Screw M1.4x3.5	E12714-035	1	X